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THE ARCHITECTURAL RECORD

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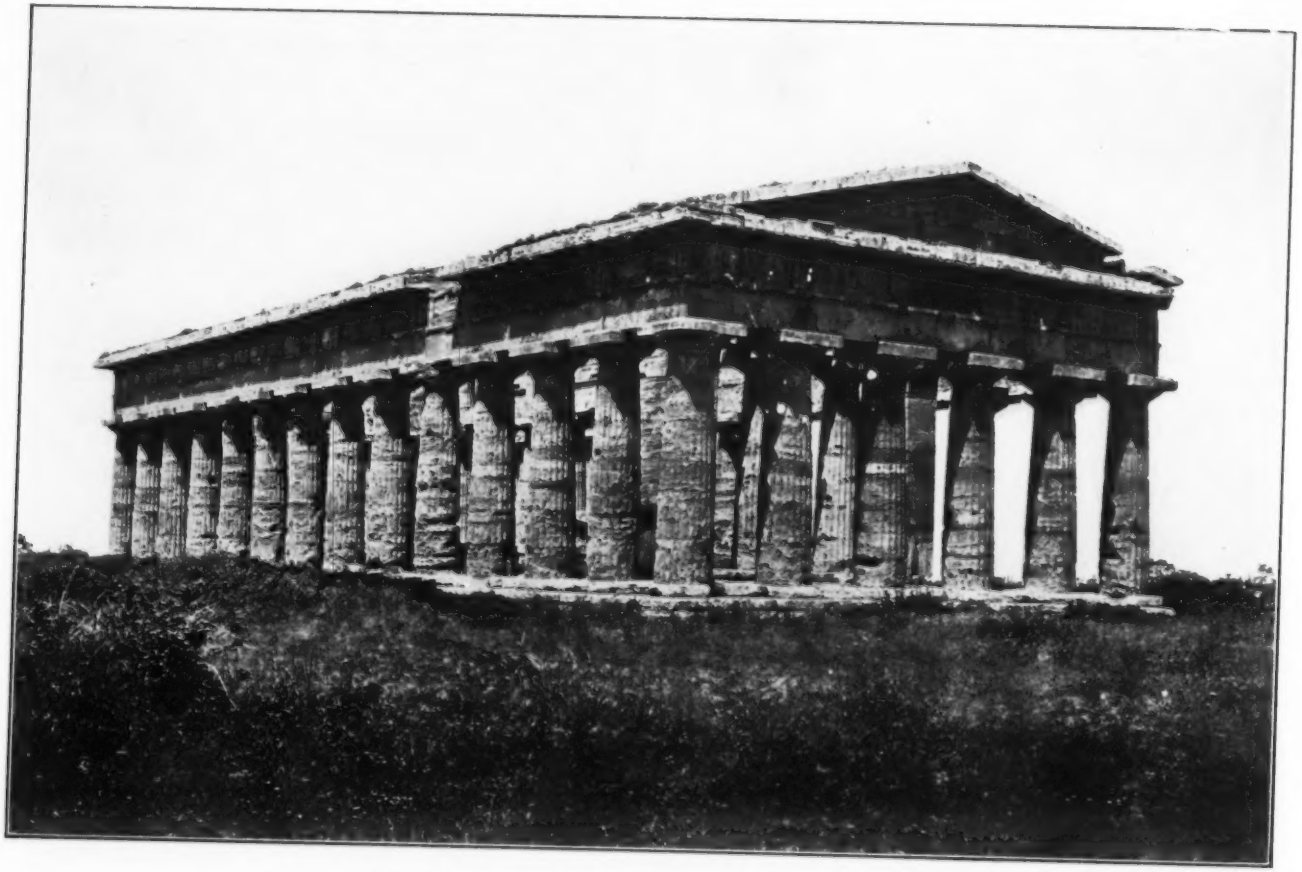

FIG. 1. THE TEMPLE OF POSEIDON AT PAESTUM.

The
Architectural Record.
VOL. XVII. JUNE, 1905. No 6.

The Greek Temple.

Our architecture came in the first place from Greece. Egypt, Assyria, Persia, India and the Far East have had but slight influence upon it, compared with that wielded by the small, arid, mountainous country where, nearly three thousand years ago, men made, in the domains of art and thought, investigations and experiments which are of immediate and direct value to us even today. One cannot reflect upon this without a feeling of astonishment. It shows us the closeness of our connection with the people of distant ages, the community that exists, in spite of seeming differences, among the human species on our planet. A well-conducted experiment performed at one spot on the earth and in one hour of time can be of use to the whole world and through all the ages. The Greeks of the sixth and fifth centuries B. C. made such an experiment as this, when they thought of a certain form of temple with columns, and laid down certain rules for its construction. And we of the twentieth century turn to the subtle-minded Greeks of twenty-four hundred years ago, when we have to deal with a problem in architecture and want to know how to solve it with elegance and precision.

How peoples of artistic endowments solved problems in architecture is just what we purpose examining here in a series of articles, in the course of which we shall evoke before readers of the Architectural Record the typical edifices of different periods. We shall see that the problems vary according to the prevailing economic, social and moral conditions of the peoples; but that, running through this diversity, there is a method which can be detected by analysis. We shall show that with architecture it is not the same as with tastes and colors, which one cannot judge of; that, on the contrary, it has rules which can be defined and which hold good now as firmly as they did twenty-five centuries back, however different may be the conditions of life in our time from those of the Greeks of the sixth century B. C. In order to trace these rules it is sufficient for us to put ourselves into the state of mind of the men of olden times. This is not impossible to anyone possessing the historic sense, the critical temperament, coupled with a little imagination. We therefore invite our readers to join us in becoming, in spirit, Greek or Roman, changing by turn into Byzantines, Frenchmen of the thirteenth century or Italians of the fifteenth. We will live successively in each one of the periods in which the genius of man has manifested itself the most brilliantly. To contemplate and comment upon works of beauty would in itself be an adequate object; beyond that, we shall extract rules of present value to ourselves—rules which might guide an architect entrusted with the erection of a sky-

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scraper on Fifth Avenue or a national monument in Washington.

* * *

Of the domestic architecture of the Greeks nothing whatever remains. In ancient Greece, private houses never had much architectural interest. A citizen of Athens or Sparta was too busy with state affairs to spend much time at home; he wanted to be in the public place where he could find his friends and fellow citizens. Moreover, the climate allowed him to live in the open air during the greater part of the year. It was on the *agora* that the citizens assembled in public meeting. It was there, from a rostrum, that the orators harangued the crowd (hence the need of a good voice and a clear enunciation; hence, too, the famous pebbles of Demosthenes). It was in the open air that Socrates and the sophists held their discussions, alongside the Ilyssus, under the plane-trees, or on a public place. It was in the Academy gardens that Plato platonized, and in open-air gymnasiums that the youths practised their athletic games. There was no *raison d'être* for a domestic architecture with such a people and in such a climate. It is not necesary to have palatial administrative buildings for governing a people that lives in the public places. Besides, what significance would the term comfort, which is so full of meaning to us twentieth-century westerns, living in cold, damp climates where fog, wind and rain prevail during half the year—what sense, we ask, would this word have for the robust Greeks of the fifth century B. C., whose children Aristophanes pictures to us on their way to school, bareheaded, in spite of the falling snow, and singing as they go.

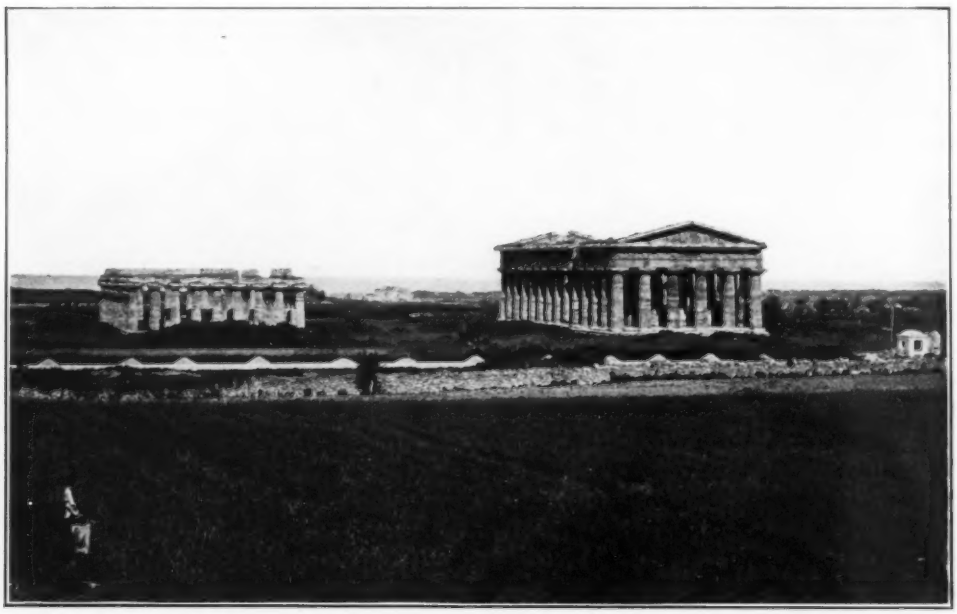


FIG. 2. THE TEMPLE OF POSEIDON AND THE BASILICA, PAESTUM.

A consideration of the ideas helping to form society in ancient times shows that there were certain notions touching divinity, a certain conception of the reverence due to ancestors and the sacrifices to be offered to the gods watching over the community, and that the place which originally brought men together and resolved them into society was a

place of worship. First, religion brought about the grouping into families, and then it united the families inhabiting the same corner of the earth so as to constitute a people. The temple, therefore, held a place in society which it has since lost. It was the concrete symbol of the mysterious tie which brought a group of men together and differentiated them from neighboring groups. Thus it was that, at first, the gods were local and different. The Delphic Apollo belonged exclusively to Delphi; the Pallas of Athens was adored only by the Athenians. For a long time, none but the inhabitants of a city could join in the religious festivals of that city, as the gods were hostile to strangers; and the conception of a pan-Hellenic Zeus, adored at Olympia, is not primitive, but one of late date. It was the possession of common ancestors that, in antiquity, constituted a people, and the worship of the gods of his ancestors that constituted the first religious duty of the citizen. Hence the temple, the monument *par excellence* of Grecian architecture, around which, at the great festivals, was centered the whole life and soul of the city.

Such were the moral causes from which issued the Greek temple. We shall now trace the economic conditions, and also, the artistic sentiment, which made it what it was.

* * *

We have in the first place to look at certain simple facts. It is, by the way, the little facts—those which we might think could be ignored—which are, in reality, the most important and the most decisive. If we seek the reason why architecture flourished to an unusual degree in a particular country, we shall find finally that it was a question of materials and transport facilities on the one hand, or of labor supply or some such practical consideration, on the other: that is to say, points to which the modern architect, loaded with theory, acquired in a Fine-Arts academy, attaches hardly any importance.

The primitive architecture of the Greeks was an architecture in wood. This is beyond doubt, although the contrary doctrine has had, we believe, some intelligent supporters. It is equally certain that the shape of the temple was taken from the great hall of the king's palace. The term "king" must not, however, be understood here in its modern sense. "Lords of the Manor," or "gentlemen farmers," would pretty closely describe the "kings" of Ancient Greece. The columns of the said hall were in wood; the columns of the primitive temple were also in wood. All the essential features of the stone temple can be traced back to the wooden temple. However, our present purpose is not to dig down to the origin of these features, but to examine the Greek temple as we find it.

The Greek temple was extremely simple. One must put aside all modern ideas regarding churches and their use. A church is now—and, indeed, has been ever since the beginning of the Christian era—a closed place where believers worship; where the congregation follow the different ceremonial acts, taking part therein by singing and by their responses, and listening to the address which the priest delivers from the pulpit. For Christian or Mahommedan worship it is necessary, therefore, to have spacious roofed halls, capable of sheltering a large number of persons during the hour or more that the services last. In ancient times it was not at all the same. There were no ceremonies inside the temple, and the worshippers were not allowed to enter it. Within, there was nothing more than a statue of the god or goddess to whom the edifice was consecrated. Only the priests could go inside the *cella* which contained the god. The people took part in the worship by attending the sacrifices which were offered up in the open air in front of the temple. They went there in procession on feast days, carrying flowers and wreaths of leaves.

Consequently, the problem which the Greek architect had to solve was the following: provide a *cella* for the god's

statue; this *cella* to be the central part of a building of monumental appearance which shall embellish the city and be a source of legitimate pride to the inhabitants, and around which they can come in procession on holidays. This was a very simple task, so much so that a modern architect would scorn to undertake it, or would only accept with the firm resolve to utilize the resources of his art to enliven the plain, dry scheme submitted to him.

FIG. 3. INTERIOR OF THE TEMPLE OF POSEIDON, AT PAESTUM.

The Greek architect falls in with this program in all its simplicity. A *cella* is wanted, so he constructs an oblong chamber; then, on the front, he extends the lateral walls and supports the roof by means either of two or four columns between these walls. This suffices. However, he observes the excellent effect of the portico columns, and concludes that a colonnade carried all round the temple will make the building more ornate, while the space thus covered in will be available for the popular processions on festive occasions and enable them to move about along the outside of the *cella*. Next, in order that the temple shall be higher and stand forth more prominently, he constructs, on a continuous stone perron, a stylobate, which is reached by ascending a few steps. He covers the *cella* with a roof having two slopes, to run off the rain-water. The angle of the two slopes, cut on the façade, forms a triangular fronton—a large empty space, admirably adapted to receive a sculptured decoration.

The forgoing describes the essential features of the Greek temple. It is not complex. All it amounts to is: columns, supporting an entablature into which

are fitted the beams of the roofing; the plain walls of the *cella*, and a wooden roof, covered by marble or terra cotta bricks, with a double slope. There is no difficult problem involved; very little strain is put upon the materials, each stone having to bear only a third of the weight it is capable of bearing; there is no vault, no oblique pressure, as the loads bear perpendicularly on the columns, and no sinking or deflection is to be feared.

How then was it possible to put so much art into the execution of such a simple work? To understand this, one must take a temple and examine it closely. It is ready to impart its secrets to him who studies it attentively. Unfortunately, the hand of time—and that of man—has been unkind to the Greek temples, in spite of their having been built to last for ever. We know that the Parthenon was wrecked by the explosion of a Turkish powder-magazine, only the end columns remaining. In more recent times, the English have torn down all the sculptures and carried them from beneath the sunny Attic skies to the fogs of London. Other famous Greek temples were destroyed by barbarian invaders, and their remains are being sought for to-day underneath deep masses of ruins. Earthquakes caused the destruction of the Sicilian temples, while the famous sanctuary of Diana, at Ephesus, was set on fire by a madman named Erostratus, who wanted his name to be celebrated and descend to posterity, and succeeded. What is left of all those masterpieces? There is only a single temple still standing and, architecturally speaking, in a fairly complete state, and that one not in Greece but in Italy, viz., the Temple of Pæstum, situated a score of miles south of Salerno. Let us then go to Pæstum and see how much is left of the best-preserved Greek temple in existence. After having examined these remains we will, with the help of the numerous pieces of evidence collected by contemporary science, reconstitute a typical Greek temple of the same period—that is, the end of the sixth and beginning of the fifth centuries B. C.—in all the splendor of its decoration, painted and sculptured.

* * *

We give here an extract relating to Pæstum taken from a traveler's notebook, a whole chapter of analysis not being worth so much as one page recording the emotions experienced in presence of such an edifice.

"The Temple of Poseïdon at Pæstum was erected at the end of the sixth century B. C., by some Greek adventurers who had left their country and crossed Charybdis and Scylla in order to settle on the smiling Calabrian shores. They raised this temple, at the waterside, to Poseïdon, protector of their frail barks. The town which it defended from the possible wrath of the god has disappeared; brambles cover the now deserted plain; around the edifice silence and fever reign; even the sea which washed it having abandoned it; yet still it rears itself, despite the ages, in the perpetual youth of its first simplicity.

"The walls of the *cella* are in ruins; only the forest of sturdy columns remain, supporting the massive entablature and the abased frontons. The stone, polished and tanned by the sea breezes, which have impregnated it with salt, has acquired yellow, coppery shades that stand out from the azure horizon of the sea and from the sombre background of mountains.

"We seated ourselves on the ruins of the ramparts, near what was once the city gateway. Heavy clouds passed across the heavens, occasionally hiding the sun and covering the landscape with their shadows, as though the serene skies of other days had gone forever, not being able to survive the oblivion into which the ancient religions had fallen.

"Fever-stricken children and dogs drew nigh to pick up the fragments of our frugal repast of eggs and oranges.

"A great sadness pervaded these forsaken precincts.

"Under the portico of the temple three kneeling women were uprooting the weeds which had thrust themselves be-

tween the disjointed flagstones. They began a weird song, unlike any other; their voices were guttural and metallic; the notes dragged in a strange harmony, broken with wails abruptly interrupted, obscurely evoking the idea of grief and lamentations for the long-lost dead. The melody floated around the yellow stones as though caressing them. Presently a ray of sunshine pierced the clouds and all at once the bold structure of the temple seemed to become animated by the familiar cadences; the slumbering soul in this wasted but still magnificent body trembled at the call of its guardians, and the sanctuary was filled with the perfume of a far-off past.

"It was but for a moment. The trembling voices ceased one after another; the colossus fell back into his heavy sleep and continued the dream of solitude to which the exile of the true gods condemns him. And so we departed, with trouble in our hearts, for we felt that a divine spirit had been near us."

* * *

The accompanying photographs, Figs. 1, 2 and 3 convey an exact idea of the temple and its location. It is reached by three steps. It has six columns on the front, and fourteen side columns, including the two corner ones. The columns consisted of cylindrical blocks. In still earlier times temple columns were monoliths, thus recalling the wooden columns—the primitive tree-trunk. The cylindrical shape was the most convenient, as it allowed the big blocks of stone to be rolled from the quarry to the site of the temple. It must be remembered that no good roads, nor any canals or railroads, existed. Nor was

FIG. 4. THE TEMPLE OF ZEUS AT OLYMPIA.
Restoration by M. Laloux—from the original in the Ecole des Beaux Arts, Paris.

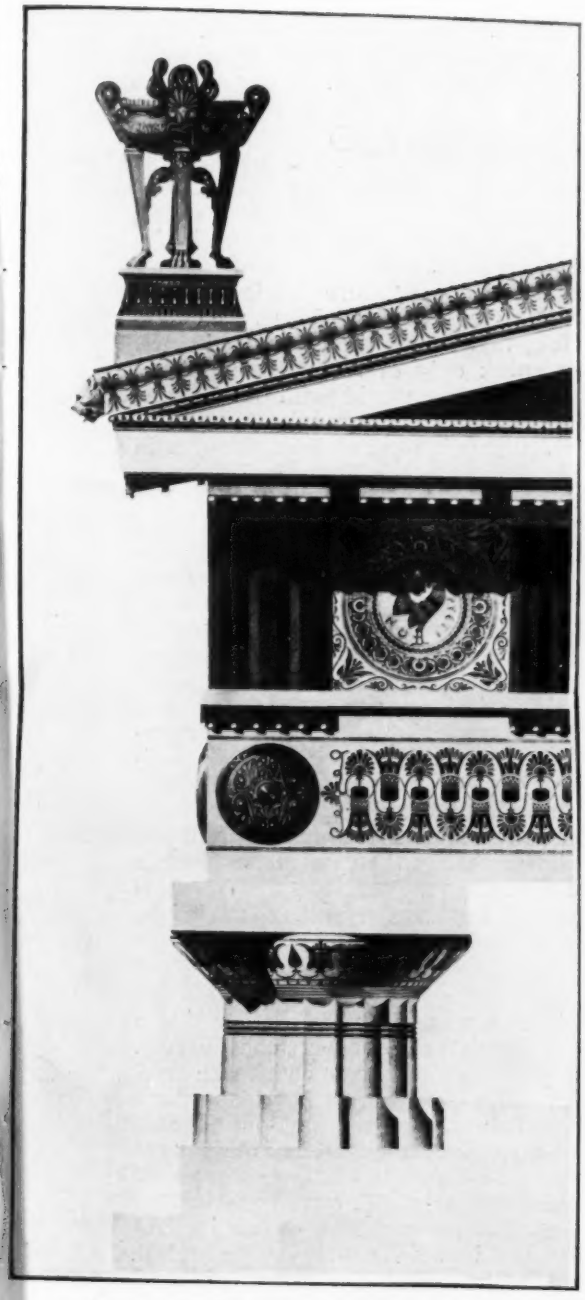


FIG 5. ORDER OF THE TEMPLE OF ZEUS AT OLYMPIA.

From the original drawing by M. Laloux in the Ecole des Beaux Arts, Paris.

steel known to the people of those days. We may be sure that had they lived in the nineteenth century they would never have built the solid and imposing Temple of Pæstum. These cylindrical blocks were placed in position without mortar. The tambours, in many cases, were worn, by being rotated on beds of sand, so that the joints should fit exactly. As the Greeks intended their work to last eternally, the blocks they used were of enormous size, and every one of them was capable of carrying very much more than its weight. Besides, the weights were vertical and there were no pressures tending to cause the columns or the walls to deviate. There remained, however, the danger of earthquake shocks, which were very frequent in the Archipelago and in Sicily. To guard against these, the stones were fastened together by tenons, either in wood or metal, placed in the center of the columns. By this means the columns and stones were perfectly stable. Yet in spite of these precautions most of the temples of antiquity have suffered from earthquakes.

Above the columns, the entablature supports the roof. But in order to enlarge the surface of contact between the cylindrical columns and the entablature, the former are spread into capitals, which themselves bear a large square stone—the abacus, whose purpose it is to distribute the weight of the entablature over a still larger area. The entablature is composed of three parts, namely: the plain architrave, a platband of stone blocks running from center of column to center of column; above, the frieze, which comprises a series of metopes (which are merely plain filling-in panels) alternating with triglyphs—stones with two vertical grooves, thus forming toruses in relief. Above the frieze the cornice projects with a reverse to prevent the rainwater from reaching the frieze and thence the columns; the lower face of the cornice being decorated with ornaments called "guttæ." At the summit, a series of rounded tiles send the water to either side. Minute precautions are taken to stop it from

penetrating to the framing. Below, the water is drained away either by a gutter, as in the Parthenon, or by a row of collectors, each having a discharge orifice outside. The *cella* walls consist of

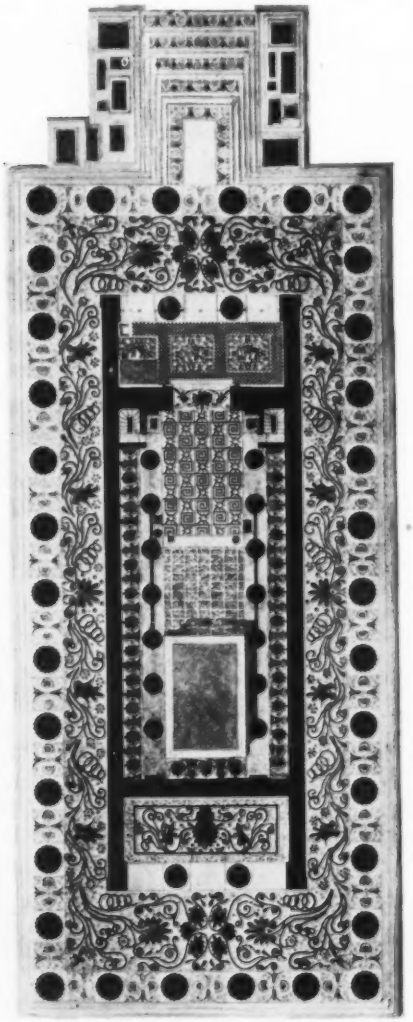


FIG. 6. PLAN OF THE TEMPLE OF ZEUS AT OLYMPIA.

From the original drawing by M. Laloux in the Ecole des Beaux Arts, Paris.

symmetrical courses of stone, without any mortar. By the way, the stones of the architrave of the Temple of Pæstum are laid on the breaking grain.

The foregoing description gives the essential features of the Temple of Pæstum. As to its dimensions, they are: length, 190 ft; breadth, 85 ft. The columns are 29 ft. high and 7½ ft. in diameter. It dates from the close of the sixth or beginning of the fifth century B. C., and is the most perfect example of the Doric order previous to the Parthenon, which, as we all know, was built about half a century later. The Temple of Pæstum is more squat, more thick-set; the fronton angle is more obtuse, the entablature higher and the columns shorter. To speak only of the most important differences, we would point out that the Parthenon is an octastyle—that is to say, a building with eight columns in front, whereas the Temple of Pæstum, having only six, is a hexastyle. It is a satisfactory thing that the two best Greek temples offer such marked differences, for this supports what we are anxious to emphasize, namely, that the Greek genius was a genius of freedom and invention, never having had fixed rules, to be followed absolutely in all their logical severity. There is not *a* Greek temple, but there are Greek *temples*, all differing from one another in dimensions—elevation, proportions, etc. Chronologically, the spaces have gone on increasing, to the detriment of the solid parts. In the case of the Temple of Pæstum the entablature is enormous, being three-sevenths of the height up to the roof.

* * *

The Greeks never had the idea that a work of art could be created by rule. They were realists to an eminent degree, and believed only what *their* experience taught them. (By the way, our Schools exist solely upon experiences they have not gone through—the experiences of others). For them, an edifice had to please the eye and satisfy their instinctive and imperious desire to be logical, and logic demands that the forms shall be appropriate to the functions; that, just as legs are intended for walking, so supports ought to have something to support.

FIG. 7. FRAGMENTS OF SCULPTURE FROM THE TEMPLE OF ZEUS, AT OLYMPIA.
The figures above are those of a Centaur and Deidamia, from the Western front. The figure below is that of the River Cladeos, from the Eastern front.

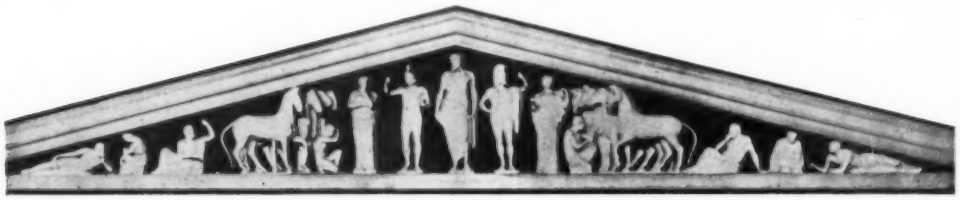


FIG. 8. RESTORATION OF THE EASTERN FRONTON OF THE TEMPLE OF ZEUS, AT OLYMPIA.

Let us first see how it is with regard to the appropriateness of forms to functions. The original Greek temple was in wood. Should we, therefore, have a copy in stone of the wooden temple? This would certainly be a great disappointment to those people who think that each material ought to be employed according to its laws and qualities. Now between wood and stone there is a wide gulf. If the Greek temple in stone were a copy *ne varietur* of the wooden edifice, all the modern dabblers in architecture would triumph, and be encouraged to go on putting up their wretched buildings, as to which nobody can tell whether they consist of steel, brick, dressed stone, cement or rubble, so artfully are they disguised and passed off as being what they are not. But as a matter of fact it is not the case. We shall demonstrate that the forms were brought into keeping in the most delicate and refined way with the new material employed.

Columns and an architrave! In the wooden temple the columns were placed with the larger part upwards. When the columns come to be made of stone the Greek inverts the capital, which, for him, is a form peculiar to this material. Above the capital he puts a square abacus, to bear the stone architrave. The natural form of this architectural item, in timber, would be, as Viollet le Duc so well points out, a beam, an elongated bressummer; nobody would dream of cutting out a flat, square block for this purpose. Hence, the abacus form is one peculiar to stone construction.

Primitive wood architecture allowed of long intercolumniations, and what we know of Greek constructions in this material shows that the columns were, in fact, very wide apart. As stone does not warp like wood, the Greeks brought the columns closer together. So here also there is no copying, but an adaptation of forms to functions.

Above the architrave, the stone frieze again shows the original structure. There is no doubt that the triglyphs indicate, on the exterior, the ends of the wooden beams of the roofing, and that the metopes stand for the voids between the beams. But, in the stone temple, the triglyphs play a decorative part. Above the columns they emphasize to the eye the rôle of a support in the edifice. Moreover, so far are they from being an exact duplicate of the wooden beam that we see them figuring on the front of the temple, whereas the cross beams, which explain the triglyphs on the sides, are missing. The stone temple has retained, from the wooden one, the mutules, those small projecting blocks which are seen underneath the triglyphs. It is interesting to note the survival of this feature.

A very striking remark has been made upon the analogy and the differences between the stone temple and its predecessor in wood by a *savant*, M. Dieulafoy, who has observed that the system of roof framing of the latter differs entirely from our own. Properly speaking, the Greek framing is on the stacking system, the wood being piled up as one would pile up stone. Whereas the tie-beam in our framing supports a longitudinal strain and prevents the two principal rafters from getting apart, in the Greek framing, it bears a weight, through the medium of a king-post. Therefore, the work required of it is

FIG. 9. RESTORATION OF THE WESTERN FRONTON OF THE TEMPLE OF ZEUS, AT OLYMPIA.

to bear a weight, and not to serve as a tie. It acts as a long stone acts, and the beam must be of immense size to bear the load put upon it. As M. Dieulafoy says, the Greek framing is really masonry in wood.

This enables us to understand how easy it was to modify slightly the forms in order to have a stone temple in which forms and structure should be in harmony. The manner in which the Greeks, who began with wood, came to employ stone; the taste and ingenuity displayed by them in bringing forms and organs into agreement—all this deserves our deepest admiration and makes this study, into which we cannot go in detail, well worth the attention of everyone who is interested in the fundamental questions of architecture.

* * *

In constructing their stone edifices, the Greeks, who were reasoners and logicians, followed certain rules, and adopted, for each edifice, a certain fixed proportion. What does this mean? It means that the proportions of the different parts of the edifice are simple proportions, which can be reduced to a common measure. Take as an example the Temple of Pæstum, with which we are now dealing. The module is the mean radius of the column. This module measures three feet. The column is ten times the module, or say thirty feet. The distance between the axes of the columns is five times the module, say fifteen feet. The total height of the entablature is also fifteen feet. the width of the abacus is three modules, equal to nine feet. It is thus seen that all these numbers are multiples of three, which is the module. In this manner the proportions of the different members of an edifice have a constant relation to each other.

It goes without saying that the module varies for each edifice; there is no single and absolute rule. For instance, in the Doric order the length of the column varies from ten to twelve modules; in the Ionic order from sixteen to twenty-one. The entablature of the Doric order measures five modules, and that of the Ionic only four.

Once these proportions were determined, the Greeks did not trust to calculation alone as regards the different parts of their building. They knew that an edifice was not an abstract thing, but a mass of stone surrounded by air and light, and that after having studied the proportions on the plan, it was necessary to study the architectural forms in the light of day. That seems very simple, but it is not. We shall see to what a high degree of refinement the Greeks carried this concrete and realistic study of an edifice enveloped by a certain atmosphere. Every scholar is familiar with what we are going to summarize here; but architects, who ought to apply these methods, are ignorant of them. They still believe that the sky and light of Attica are the same as those of Paris, London and New York. This is a grave error. Who are the architects of our day that trouble about these questions? So-called Greek and Roman edifices are built in London and Paris, and what an aspect is presented by those noble colonnades, coated with soot, under our fog-laden skies! In the United States the light is quite different from what it is in western Europe; it has

FIG. 10. SEATED FIGURES FROM THE EASTERN FRONT OF THE TEMPLE OF ZEUS, AT OLYMPIA.

the clearness, strength and freedom from half-tints, characterizing the light in Greece and southern Italy. Consequently the forms found by the Greeks are more in their native atmosphere in North America than in France, England or Germany. It is true that they do not correspond to present needs, but that is another question: we are speaking now of light and atmosphere.

The Greeks observed that a smooth column melted in the light and that its lines were vague and uncertain .In order to restore its definiteness they conceived the idea of fluting it. The sharp ridges of the fluting, catching the light, contrasted with the dark hollows, thus giving body to the column and emphasizing the vertical outline of the edifice; whence a double advantage. This discovery could never have been made on paper.

Then, as the abacus of the capital casts a shadow upon the top of the column, the junction of capital and column becomes indistinct. To restore the necessary effect, the Greek cuts several deep lines at the point of junction, and to emphasize them he paints them in a dark tone. Even the curve of the circular torus carrying the abacus is so designed that the bright light, striking upon the relief, shall fade into a shaded half-tint towards the hollow. Thus, as Viollet le Duc truly says, the Greek preserves, *even in appearance*, the forms which his reason tells him to adopt as being the best and most enduring.

"Even in appearance." This leads us to the subject of optical illusions, and we shall here see still more clearly that the Greek never let himself be guided by mathematical considerations, but observed and experimented directly upon the things themselves. He relied upon his senses, and especially his eyes, for the pleasure of which organs, in the long run, all things are intended. He thus noticed that cylindrical columns, when "dressed," appeared to be strangled in the middle. He therefore drew the lines of the shaft outwards. In the same way, the columns appear thicker or slighter according to whether they stand out against the sky or against the *cella* wall, painted in dark red. The open air "eats" away the corner column; therefore, the Greek makes this column thicker than the inner ones of the front.

Again, the Greek diminishes the interval separating this column from its neighbors, because the eye requires a force at the corner of the edifice.

The Greek observes that the vertical columns appear to incline towards the void: thereupon he corrects the seeming fault by making them lean a little towards the interior of the building.

Similarly, the fronton is not vertical, but inclined outwards, for the reason that if it was vertical it would appear to retreat.

The horizontal lines of edifices—all our edifices—appear to bend in the middle and turn their concavity upwards. The Greeks, guided as they always were by the experience of the eye, followed their usual method by deforming the horizontal lines either of the architraves or of the pavements upon which the colonnades rested. These curves are very slight. In the 330 feet of lateral frontage of the Parthenon the deflection required is only about four inches.

In short, the subtle Greeks, avoiding a slavish adherence to strict modulary and mathematical proportions, deformed their edifices in order that they should appear symmetrical to the spectator. Thus, as the high parts of an edifice are seen foreshortened by anyone standing on the ground, it is necessary to increase their dimensions so that they shall *appear* in harmony with the lower parts. And this is what the Greeks did, not only in the case of frontons, but also of statues which were to be viewed from below.

It must be confessed that we moderns have not had the wisdom to profit by the valuable lessons and remarkable experiences of the ancient Greeks. We have copied clumsily, more like children than like artists. We have adhered to the letter that kills rather than the spirit that quickens—and we have not even done that much with any precision.

FIG. 11. FIGURES FROM THE WESTERN FRONT OF THE TEMPLE OF ZEUS, AT OLYMPIA.

What contemporary architect takes account of the laws of optical distortions, although they are explained at length in many text-books? All modern architects ignore them. Judge, then, how far they are from discovering such things. The admirable Parthenon friezes in the British Museum have been placed on view at the height of a man; likewise the fronton figures; yet Phidias and his assistants knew they were to be placed at a considerable height, which would oblige the person looking at them to gaze upwards, and treated them accordingly.

When one reflects upon these facts, which at first sight seem unimportant, one is led to the conclusion that our boasted art-culture is perhaps after all only a vulgar make-believe compared with the true art created by the ancient Greeks; and that we, too, deserve the name applied by them to those who were not of themselves: *Βαρβάροι.*

* * *

Let us see of what a Greek temple consisted, according to Pæstum, that noble and archaic pile, of which only the walls and colonnade now remain, although on Greek ground we shall find the full material with which to complete the ruined edifice and depict here an ideal temple, with its sculptured and painted decoration and the surroundings amid which the artistic genius of the Greeks placed the original. To do this, we shall profit by the labors of the Schools of Archæology in Greece and, in particular, the remarkable discoveries and reconstitutions made by French *savants* at Delphi and Olympia. All the information here given, and which has been gathered only with great difficulty, concerns the same period, that is, the first fifty years of that glorious fifth century B. C. Nothing is left of the sculptured decoration of Pæstum, nor of the paintings with which the edifice was covered. The Temple of Pæstum was built of travertine, which, with age, has taken on an admirable brown tint. Let us be thankful, however, to time, and not to the Greeks, for the rich color of this stone. At the time the temple was erected this material was not considered handsome enough and the building was entirely covered with stucco; and moreover, this stucco was painted. The marble temples did not receive a coating of stucco, although they, too, were painted. We find it hard to realize that the Greek temples were polychromous. This fact remained unknown for many centuries. It was believed that they were white and grey; and so the school theorists (of whom we have had no dearth since the sixteenth century), found the most substantial reasons to prove that the genuine architecture—the great and noble architecture, derived its value entirely from its modulary proportions and its combinations of solid parts and spaces, and scorned all colored embellishments. Polychromy, they said, was the work of clumsy novices, both barbarian and gothic—for the Middle-ages also had its architecture painted. Consequently, the last three centuries have witnessed the reign of grey, dull tones in architecture, because *savants* had declared that classic architecture was grey. However, *savants* have since discovered that antique architecture was, on the contrary, polychromous. How many centuries will our schools take to adapt their doctrines to this newly-found truth?

So the Greeks painted their temples.

The Greeks used color to punctuate their reliefs—to "make a ground" for the colonnades. Hence the outside face of the *cella* was painted a dark red, against which the light-colored columns stood out. To-day, the columns of the Temple of Theseus, the coloring of which is all gone, do not stand forth distinctly. The fronton tympanums, on which the statues should be visible, are of a deep blue; the triglyphs and mutules were also blue; the metopes had a painted stucco or marble ground; the band separating the architrave from the triglyphs, as well as that running between the mutules and the larmier, were of a dark red color, and the echinus on the capitals often had palm-leaf or other ornaments, colored. Lastly, the

FIG. 12. THE FIGURE OF APOLLO—CENTRAL FIGURE OF THE WESTERN FRONT OF THE TEMPLE OF ZEUS AT OLYMPIA.

richness of the effect was increased by inlaying metal on the marble, and by charging with gold, bronze and enamel. On the frieze of the Parthenon representing the festivities in honor of Minerva, the attributes were in gold. Further, the architect was assisted by the potter, for the temple was roofed with colored bricks, while terra-cotta ecroteria decorated the pinnacle and cornices.

The result was an exceedingly rich, polychromic work, such as we have difficulty in realizing. The fine reproductions made by winners of the Grand Prix de Rome for architecture and which are preserved at the Paris Ecole des Beaux-Arts will, however, help to familiarize us with the real Greek temple, as it was created. To this end we publish a view of the eastern front of the Temple of Zeus at Olympia (Fig. 4). It belongs to a little more recent period than Pæstum, and was built on the same plan. The valuable reproductions of it were done by M. Laloux. It is to be noted that the shields hanging on the architrave were not put there until the fourth century; they are the shields of the Roman consul Mummius. The fronton sculptures exist still, and, although mutilated, rank among the masterpieces of Greek statuary. We give views of them in this article. A view of the order of the temple (5) shows in detail the manner in which the polychromy and in a general way the whole ornamentation was composed. There may be some doubts as to the decoration of the architrave; the architrave of the Parthenon and other Greek temples of the fifth century bear no trace of painted decoration. Fig. 6 shows the reconstructed plan of the temple, which, as we have said, is very similar to that of Pæstum. Here the paving-stones of the temple were replaced by rich mosaics. It can now be imagined how sumptuous must have been the picture presented by a Greek temple, a thing which is considered by modern architects to have been a triumph of cold, abstract reasoning. Beauty, to the Greek, was not a lifeless thing, but one full of color and animation, and a voluptuous delight to the eye.

The Olympian gods, in the ruin of whose sanctuary so many treasures perished—above all the celebrated Zeus of Phidias, that supreme glory of Greek art—have preserved for us some valuable fragments of sculptured decoration of the temple. The German School at Athens has found, buried under the ruins, the statues belonging to the frontons and metopes. We give views of the best-preserved pieces.

The eastern fronton, as appears by the reproduction shown in Fig. 8, depicts the preparations for the race between Pelops and Oenomaus, between whom, in the center, is Zeus. Beside Oenomaus is his wife, Sterope, one of the daughters of Atlas. Then there are the four race-horses; then two men, seated; then a stretched-out figure representing the river Cladeos. There is a similar arrangement on the western side, with the river Alpheus at the end.

We know who was the author of these admirable works, viz., the sculptor Pæonios, of Mende, and that Alcamenes, of Athens, carved on the western fronton the Combat between the Centaurs and the Lapithes (7), with Apollo as the central figure. These statues were thrown down by earthquakes, and broke in falling. The stones of the temple, also falling in their turn, covered them. During many centuries dust and rubbish accumulated above them, and thus they slept in their mutilated state until recent times. When they were unearthed it was found that they had retained their beauty. They afford evidence of what, before the Parthenon was built, Greek sculpture was able to produce.

We only wish to note here the arrangement of these figures and groups on the fronton, the remarkable freedom of the attitudes and their variety; the robustness and ease of the bodies; the plenitude, even at that early epoch, of this art, which has been called archaic; the thrill of life still animating these mutilated marbles, and, what is perhaps of greatest importance for us, the archi-

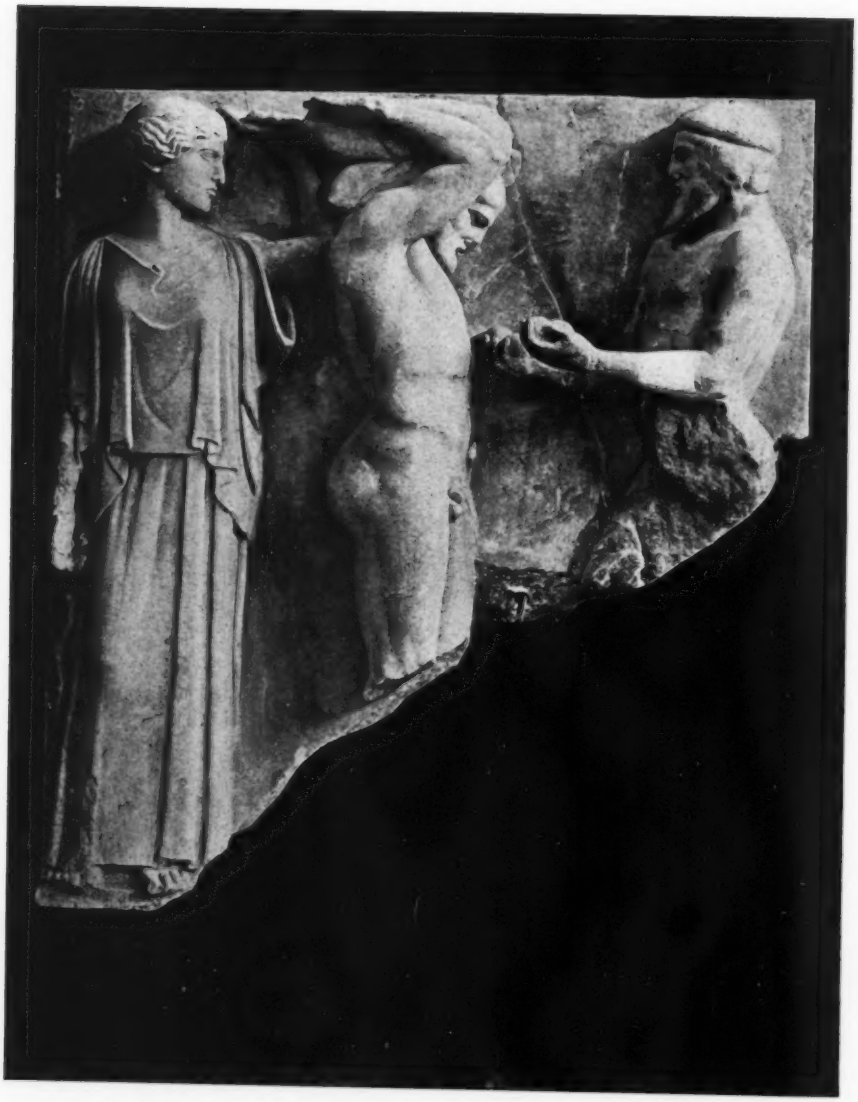


FIG. 13. A METOPE AT OLYMPIA—HERCULES OURANOPHORUS.

FIG. 14. A METOPE AT OLYMPIA—THE BIRDS OF STYMPHALUS.

FIG. 13. A METOPE AT OLYMPIA—HERCULES AND THE CRETAN BULL.

tectonic sense testified to by this sculpture—the place it occupies in the edifice, the help it gives to form the ensemble. Even the so-called defects which certain critics profess to find in these works are, in reality, good qualities; for instance, the roughness and lack of finish, and the coarse appearance of the work when viewed from close quarters. It is the same old error. People will not understand that these statues were placed at a height of sixty feet; that they were not exhibited in a museum, but erected in the open air, and that these conditions were foreseen by the authors, although they never enter the minds of our modern architects and sculptors. There is here a useful subject for meditation by us moderns, for whom decorative sculpture seems to be a superfluity, and a thing which, instead of adding an additional beauty to the edifice, often destroys the architectural harmony and mars the outlines.

We have also preserved a few of the metopes of Olympia, which enable us to reconstruct all the parts of a Greek temple. The first represents Hercules Ouranophorus—Hercules carrying the universe on his shoulders (13). The second is: The Birds of Stymphalus (14); the third: Hercules and the Bull (15). The last-named is one of the finest things in the Louvre. The date

FIG. 16. PRINCIPAL FAÇADE OF THE TREASURY OF THE ATHENIANS AT DELPHI.
Restored by M. Tournaire.

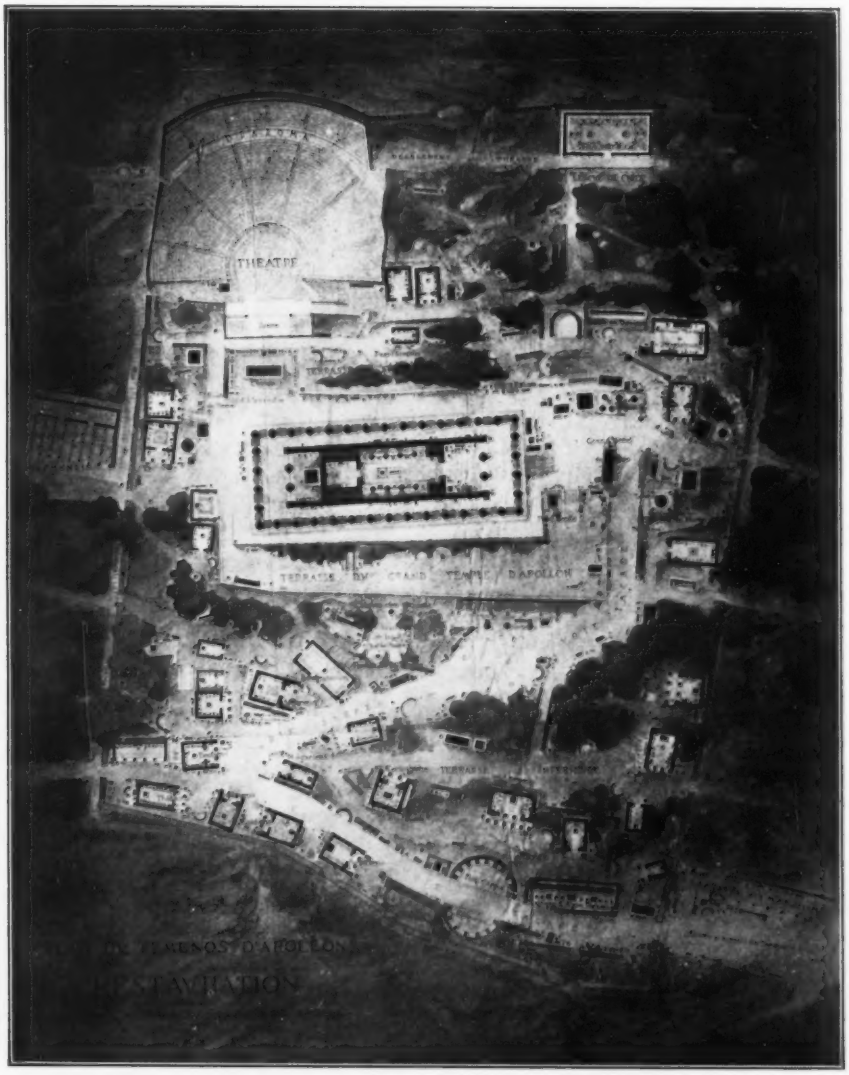


FIG. 17. THE SANCTUARY OF DELPHI.
The Plan Restored by M. Tournaire.

of these metopes is certainly the same as that of the temple itself and can be placed at about 460 B. C.

* * *

We believe the reader who has followed us thus far is beginning to form a fairly clear idea as to what a Greek temple was like. He has seen how the architect planned it; what materials he used, and how he used them; how he studied the architectural forms, not in an abstract, precise way on paper, but in the open air and the bright light of day; how, once the edifice was built, he planned its rich ornamentation, and how, for this latter part, he called upon the potter, the mosaic-worker, the painter and the sculptor. The result was a work full of richness and savor. We lay stress on this point because it has too long been the fashion to see nothing in Greek architecture except cold reason, calculation, measure, and rhythm—that is to say, qualities more or less abstract. But the fact is that while it has all these qualities it has others as well. It speaks of abundance, luxury, the joys of color. It uses polychrome effects; it employs bronze, gold, terra-cotta and painted bricks. It appeals, or rather it appealed—for it exists no longer, and can only be pictured in imagination by patient effort—to the senses as much as to the reason, which is a thing that has been forgotten. As the Greek creations reached us in a fragmentary state, and minus their decoration and coloring, we allowed ourselves to form an entirely false idea of them. Unfortunately the schools seized hold of this idea, and when they have preached a return to antiquity, it is to a dull, mournful, colorless antiquity that we

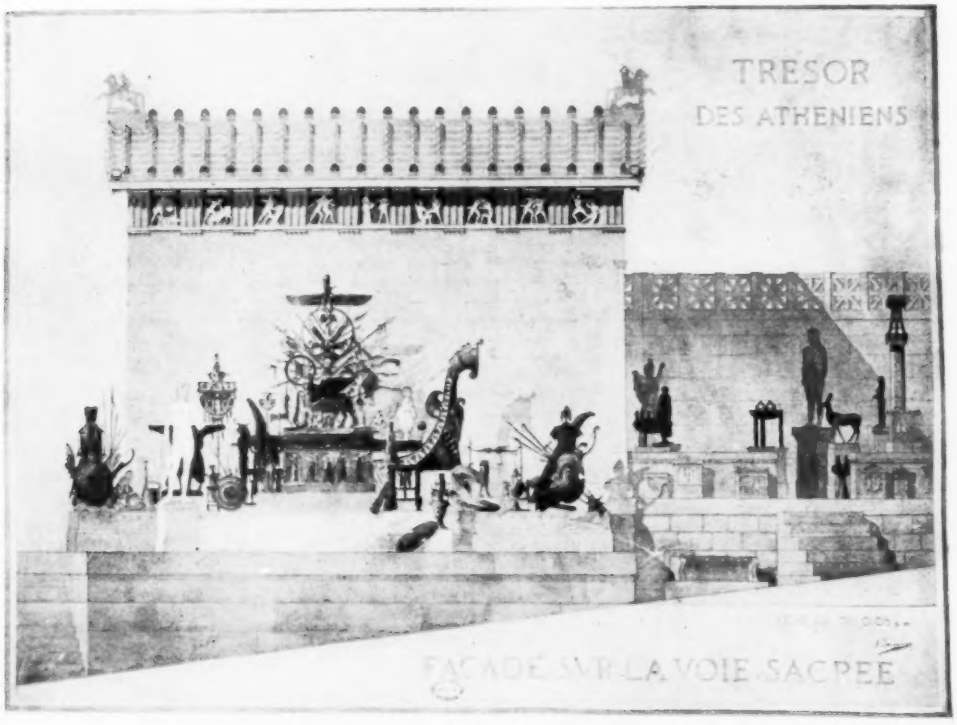


FIG. 18. THE TREASURY OF THE ATHENIANS AT DELPHI.
The lateral front restored by M. Tournaire.

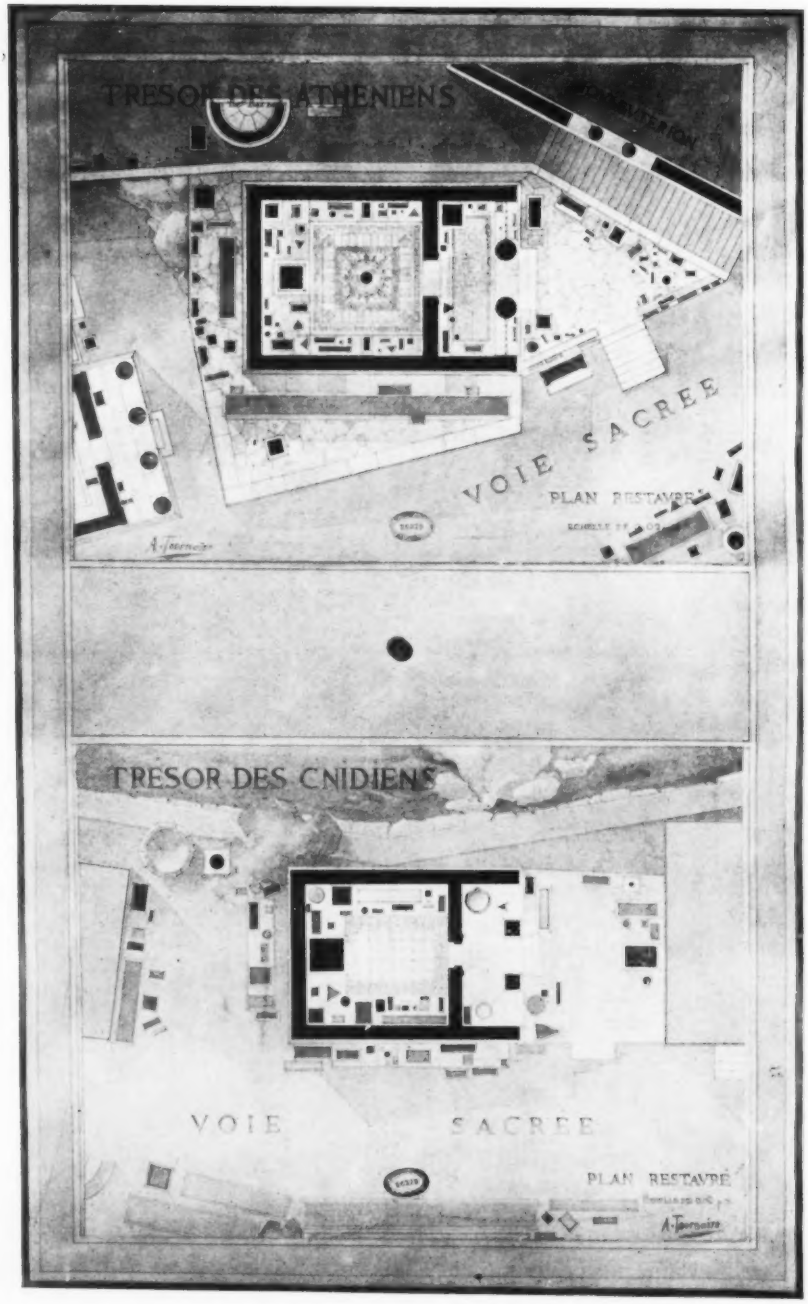


FIG. 19. PLAN OF THE TREASURY OF THE ATHENIANS AT DELPHI.
Restored by M. Tournaire.

have been directed. All neo-classic architecture is based on these erroneous theories. This misconception has weighed upon our architecture for nearly four centuries. In the nineteenth century, when Labrouste and others brought the Ecole des Beaux-Arts to a more correct view, a more harmonious sentiment, in regard to antique art, it was still to abstract reason that they appealed, and a building like the Sainte-Geneviève Library, which is so interesting from many standpoints, is still designed according to the same colorless formula, which, for the Ecole, is the Greek formula *excellence*.

FIG. 20. FRAGMENTS OF THE EASTERN FRIEZE OF THE TREASURY OF CNIDIANS AT DELPHI.

To-day, thanks to the labors of learned men of all nations, we know exactly what Greek architecture was, and to what varied means of expression its exponents resorted. It would not appear, however, that the archæological discoveries that have been made have had the least influence upon the teaching imparted at the Ecole des Beaux-Arts, although that institution ought to represent the purest and best traditions. But this is not all. For more than a century winners of the Grand Prix de Rome for architecture have had the task, during their stay in Italy, or Greece, of drawing the plans of ruined edifices, studying them in detail, and furnishing exact reproductions. They have performed this task with the most praiseworthy zeal, as well as great taste and intelligence. The collection of reproductions kept in the library of the Ecole des Beaux-Arts is most interesting and deserves to be published in its entirety. Only a few, however, have been published, notably, the celebrated one by that great architect Labrouste, who studied Pæstum; that of Olympia, by Laloux, of which we give a few plates, and some others. These are the most noteworthy works that have emanated from the French Academy at Rome, the influence of which, as regards painting, sculpture, engraving and music has been mediocre, and often pernicious, upon the artists sent there from Paris by the Ecole des Beaux-Arts. The curious part of it is that these architects, who so ably reconstituted edifices of antiquity and ornamented them on their

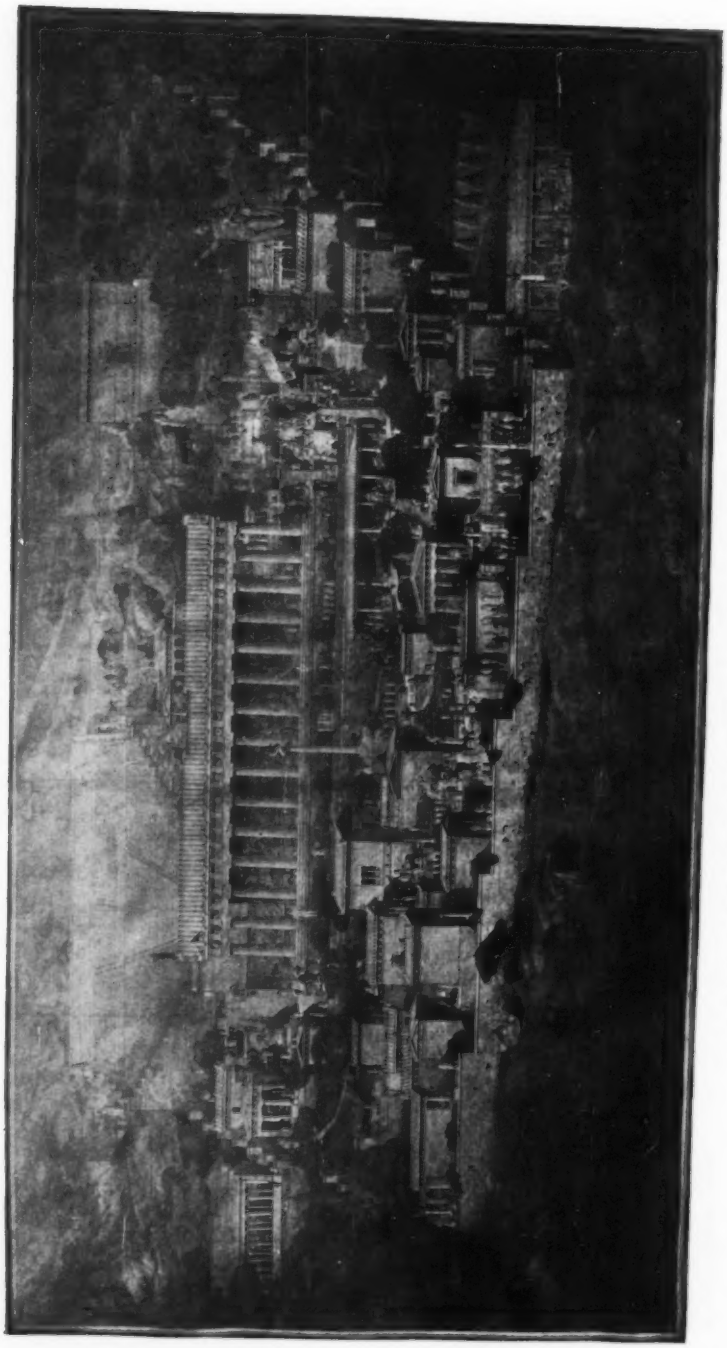


FIG. 21. PERSPECTIVE VIEW OF THE SANCTUARY OF DELPHI.
Restored by M. Tournaire.

water-color drawings with the richest polychrome decoration, are the same men who have made French nineteenth-century architecture what it is and kept it in that dull, cold, grey tone we have described and of which we are utterly weary. They cannot plead ignorance; they knew what was right, and yet have done precisely the contrary.

* * *

There still remains one point to be examined with regard to the Greek temple. We have reconstituted it as it used to be; we must now show briefly how the Greeks chose the location for it; how they placed it with respect to other buildings, and what their ideas of symmetry were. For this, we will again turn to the reproductions made by architects who have won the Grand Prix de Rome, and, confining ourselves to edifices of near date to Pæstum and Olympia, cast a glance at the Temple of Delphi, as revealed to us by the researches of the French School at Athens and architecturally reconstituted by M. Tournaire.

These reproductions of Delphi are of the deepest interest. Here also we have original works that have come to take their place among architectural reconstitutions. The general appearance, therefore, is very bright. In studying Delphi we learn that valuable truth at which I have already hinted in the course of this article, namely, that perhaps the very first of the qualities possessed by Greek art is freedom, spontaneity—I might almost say fancifulness. To us that art represents rule—something fixed and regulated, whereas to the Greeks it was a free creation. To us it suggests ideas of correctness, symmetry, to be secured at all costs, whereas with the Greeks, edifices were always designed out of symmetry. For us Greek art is based on cold reasoning, and is a thing whose effects are measured and kept within close bounds, whereas the Greeks, on the contrary, loved joyfulness and abundance. Nothing could impress the truth of this so strongly as an examination of the reproductions of Delphi, which are here submitted.

Look at this big temple, located on a hill. Around it are grouped a number of edifices, small and large; a building for holding meetings, a theatre, a considerable number of little buildings containing the treasures of the different cities which, every year, sent an embassy to Delphi laden with presents, as well as votive monuments, erected in gratitude to the Pythian Apollo. What a splendid list of subjects for a Grand Prix competition! One can imagine the beautifully symmetrical arrangements that would be sent in—the broad avenue bordered by edifices in identical groups, with the temple of the god at the end.

The Greeks did not care about having such an arrangement. The sanctuary—that is to say, the entire group of sacred edifices at Delphi—was constructed on the somewhat steep side of a hill, on which two terraces were made, one above the other. The Sacred Way leading to the Great Temple on the upper terrace had two turnings, one sharp and the other easy. Still more, the road was not even straight, but curved according to the formation of the ground. It did not lead to the front of the Great Temple so as to give the pilgrims a full view of that edifice, but only allowed of a three-quarter view of it. The same, by the way, was the case with the Parthenon, which presented an oblique view to spectators on their entering the acropolis. It was a view much liked by the ancients, but we moderns do not seem ever to be able to provide it in connection with our public edifices.

Along the Sacred Way the small edifices were built and grouped in the most irregular manner. The fronts of some were parallel with the road, while others were at a right angle thereto; others again stood obliquely. There were two terraces, as said above; also, porticos and votive columns. Thus this collection of monuments was arranged in no precise order, as will be seen from the plan given (17). A fine perspective view (Fig. 21) shows what a wealth of

FIG. 22. FAÇADE OF THE TREASURY OF THE CNIDIANS AT DELPHI.

FIG. 23. COLUMN OF THE NAXIANS AT DELPHI.

edifices of all kinds composed the Sanctuary of Apollo, how great the accumulation, on a restricted area, of buildings small and large, and statues. Such was the appearance presented in its palmy days by that assemblage of masterpieces, and it must be confessed that it is a most astonishing and interesting sight.

The work done by the French School at Athens enables us to make a close examination of the plan and elevation of one of those Treasuries. Here is the horizontal plan, the principal front, and a lateral front, of the Treasury of the Athenians. The plan (Fig. 19) shows a small rectangular building with a sort of portico in front, supported by two columns. Inside, a single chamber, in which was stored the treasure of the Athenians at Delphi. One can see how the building was placed alongside the Sacred Way. Below is the very similar plan of the Treasury of the Cnidians. The principal front (Fig. 18) is Doric of the archaic epoch. It is reached by steps. The edifice was polychrome. On the metopes combats were depicted; on the portico walls, shields and trophies were hung; before the Treasury stood tripods for the sacrifices, and the whole thing, of extreme richness, was completed by a number of statues.

To form an opinion upon the art that flourished at Delphi during the latter part of the sixth and the first moiety of the fifth centuries B. C. we have something better than architectural reproductions, which, however perfect they may be, cannot render the beauty of the works themselves; we have originals, telling us of the perfection of detail evidenced in the monuments and sculptures.

See, for example, the Treasury of the Cnidians, which has been reproduced in plaster at the Louvre Museum (Fig. 2). Here are two magnificent caryatides supporting the fronton. The frieze is ornamented with bas-relief sculptures of great vigor. In order to allow its plastic beauty to be better realized we show a detail (Fig. 20). The subjects depicted are: On the left, the Gathering of the Gods; on the right, the Combat between the Greeks and the Trojans.

Lastly, we give a view of the monument of the Naxians, which can also be seen, in the distance, on the terrace before the lateral front of the Great Temple (23). It consists of a very high fluted column which spreads into a superb Ionic capital. Crouching on the capital is a strange and striking Sphinx, with outstretched wings. Leaning on its stiffened forepaws, it still stares with pensive visage into eternal space. It is one of the most powerful, most stirring examples of archaic Greek statuary. We can also say that this work has enhanced the opinion we had formed before its discovery of the spirit of invention and liberty displayed in Greek art. This is why we have wished to present it in this article, the object of which will have been attained if, by collecting precise data for the complete reconstitution of a monument and evoking the epoch when the Greeks were creators, we have enabled the reader to realize the life and power that pervaded Greek art. May the lessons to be learned from that art, if sought for, be lessons that will lead us towards liberty and venturesomeness, and cause us to be guided, not by abstract reasoning, but reasoning which allows the brightening, enlivening influence of the senses to play its necessary part.

Jean Schopfer.

The Home of an Artist-Architect.

Louis H. Sullivan's Place at Ocean Springs, Mississippi.

Down in the sunny South, between New Orleans and Mobile, where the sparkling waters of the Gulf of Mexico makes one of its beautiful indentations, Biloxi Bay, girt by beach of golden sand and dark green pine trees, there lies a little tract of land some three hundred feet wide and eighteen hundred feet deep, in the midst of a forest.

The white shell road in front runs along a bluff ten feet above the water and beach, curving around in a gentle line.

One passes through the gates to within either by its winding carriage road or bordered paths and up a series of easy steps. There are no signs: "Trespassing not allowed." Visitors and lovers of Nature are welcome, for this is the resting place of a true believer in real Democracy who has voiced his sentiments in no uncertain tones.

Here there has been for some fifteen years or so a modest, comfortable one-story shingled cottage, reached only by the touch of the wind and the golden sun; and embowered among stately trees, growing shrubs, clinging vines, and in season, blooming roses cultivated with the greatest care and thought.

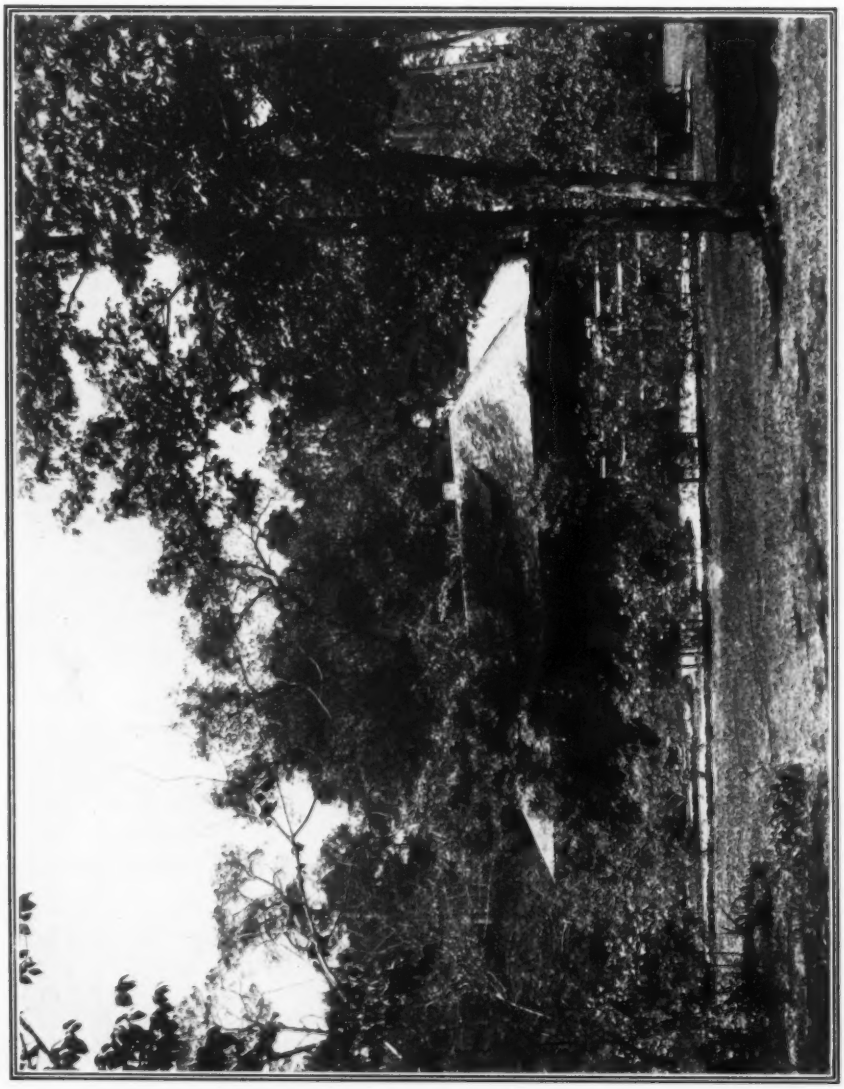
Across the front of the building runs an ample and commodious "gallery" or piazza, (for here one stays outdoors as much as possible) and sitting beneath great clusters of white wisteria hanging from the roof, can look over the rose garden blooming in rich profusion, through the vistas guarded by towering trees and across the stretch of water of the bay glittering with countless gems beyond the price of the ransom of kings, to the long, low island, fringed with its dark belt of trees above the white strip of sand which divides the water and the foliage—and all this scene of rest and tranquility breathing the soft and balmy air which envelops all and dims in hazy hue the far perspective.

Within the house, there is first a spacious hall, long and wide, and with a decidedly "home" atmosphere, and containing restful furniture, good books, interesting pictures, and articles of interest selected with constant eye for their value in beauty and use. This room is large enough to permit a nook for the dining-table and its accessories, and contains a fire-place and ample book-shelves. Along the front to the left is the spacious guests' room, to the right the owner's sleeping apartments, all opening upon the gallery. Directly in the rear of the hall is the service room, leading by a pasage to the kitchen. The wing of this portion terminates in an octagonal tower formerly used for the tank water-supply before the sinking of the artesian-well, with its ample flow of crystalline water.

Here literally under his own vine and fig-tree, at times abides one who has been for many years an ardent student and lover of Nature in all her manifold forms; and here has he absorbed much of her bounty to be given forth in productions of rare artistic beauty and worth.

In our modern life with all its cults and "isms," we use the word Inspiration with a recklesness and ignorance truly astounding. One has but to see the surroundings of which this is written fully to comprehend the immense value of such sources when approached in all seriousness with heart and brain attuned to the visible forms of organic life with full sympathy therefor.

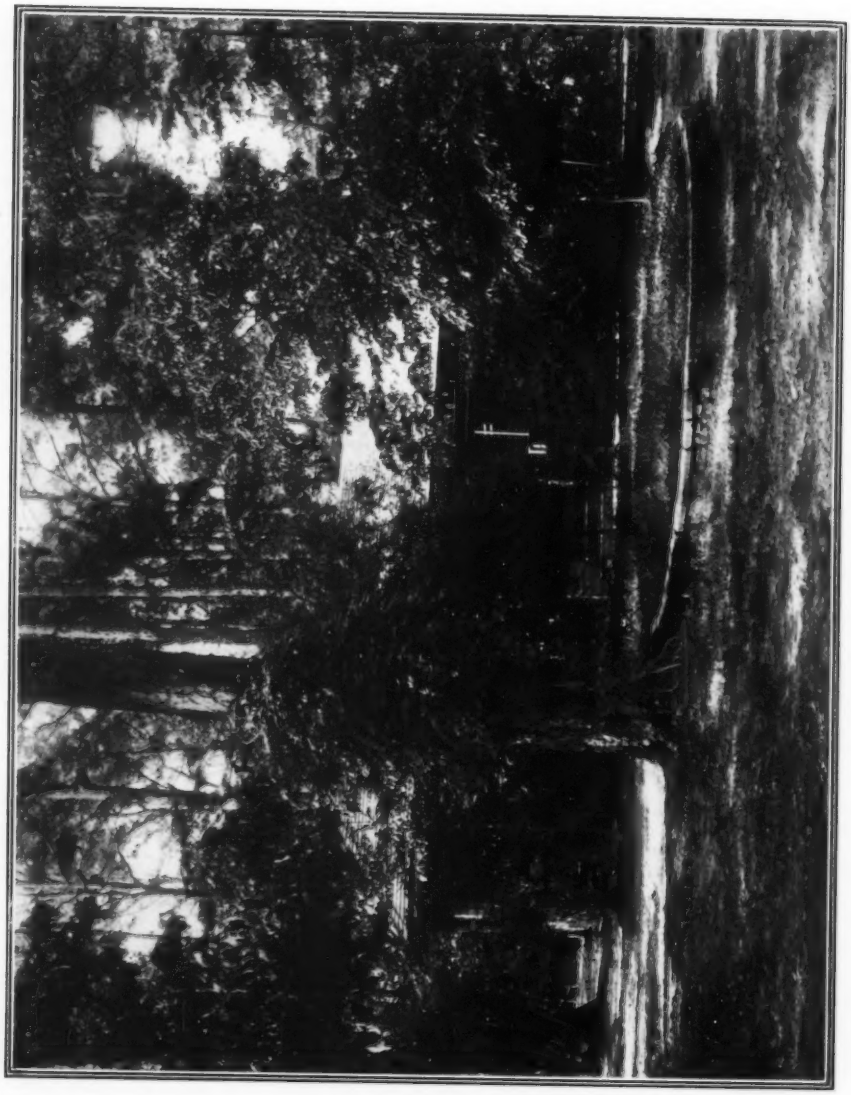
So this little garden-spot of the earth is not merely the idling-place for a busy worker's recreation; but an opportunity



GENERAL VIEW OF THE COTTAGE AND THE ROSE GARDEN—LOOKING NORTHWEST.
The Place of Louis H. Sullivan. Ocean Springs, Miss.

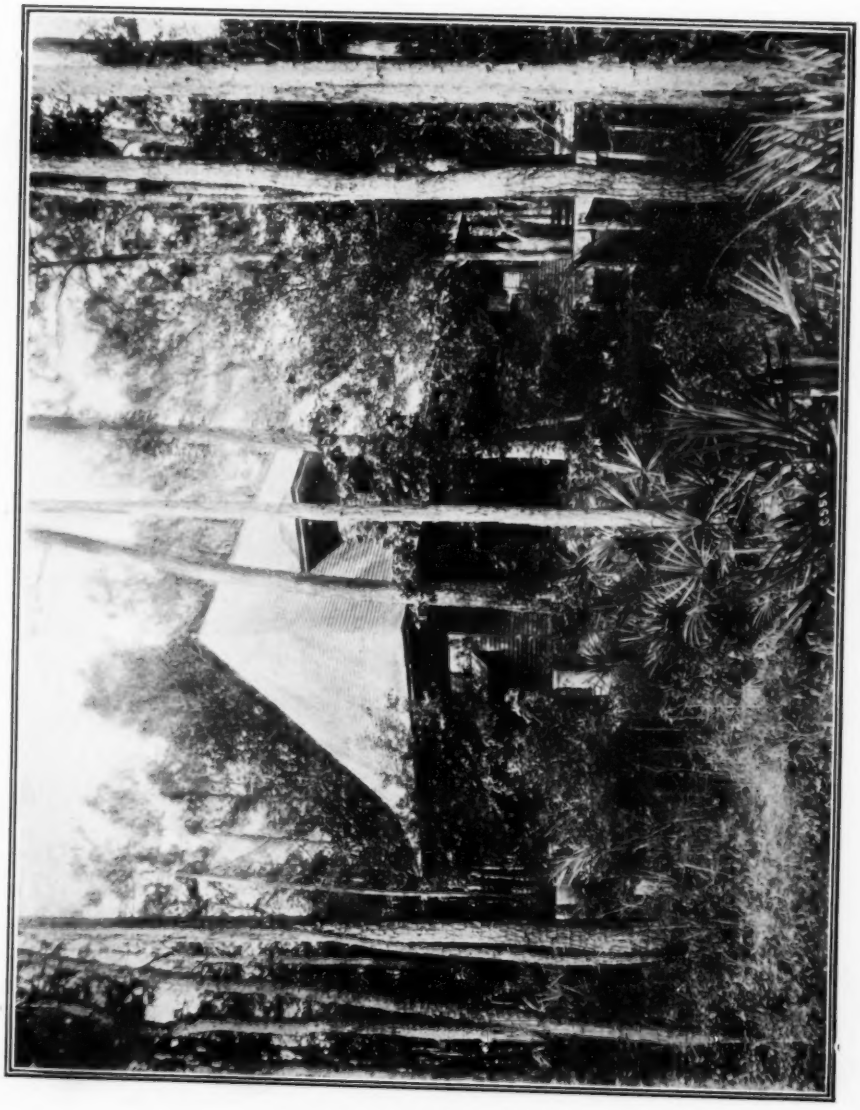
GENERAL VIEW OF THE COTTAGE IN THE LATE SPRING.

The Place of Louis H. Sullivan. Ocean Springs, Miss.



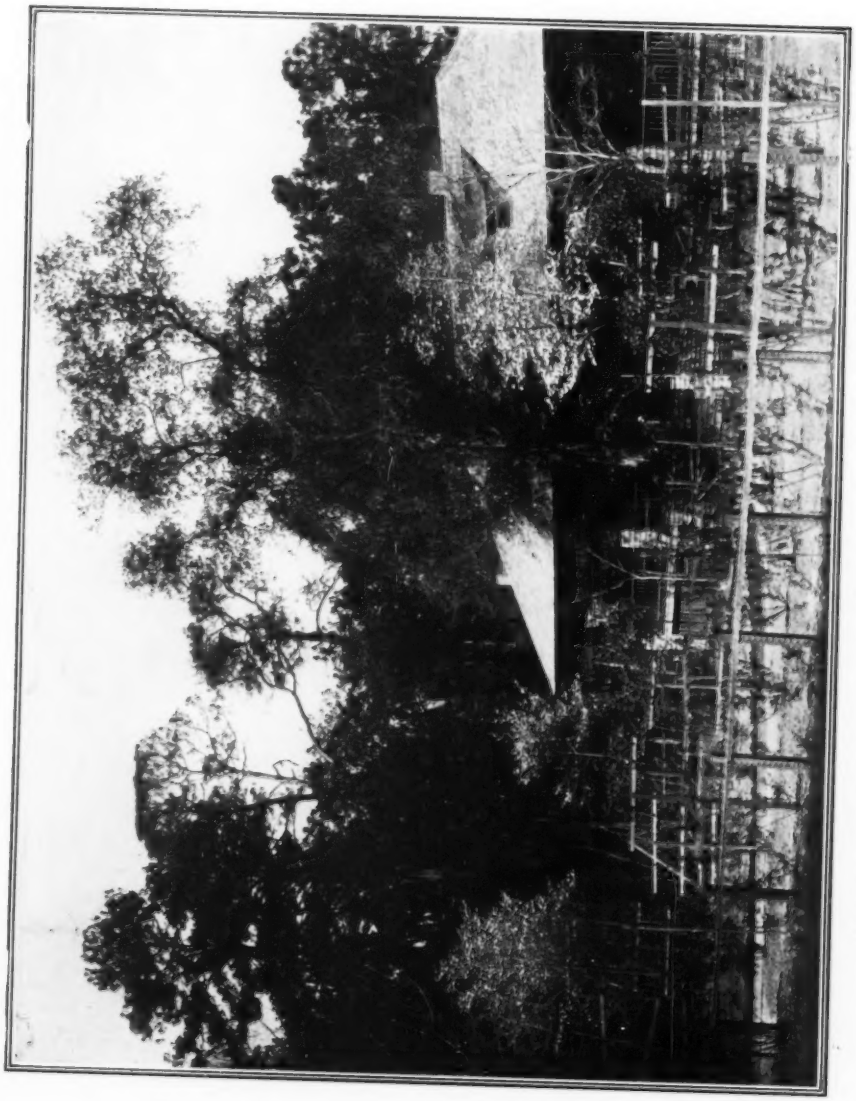
THE SERVANTS' QUARTERS.

The Place of Louis H. Sullivan. Ocean Springs, Miss.



THE STABLE.

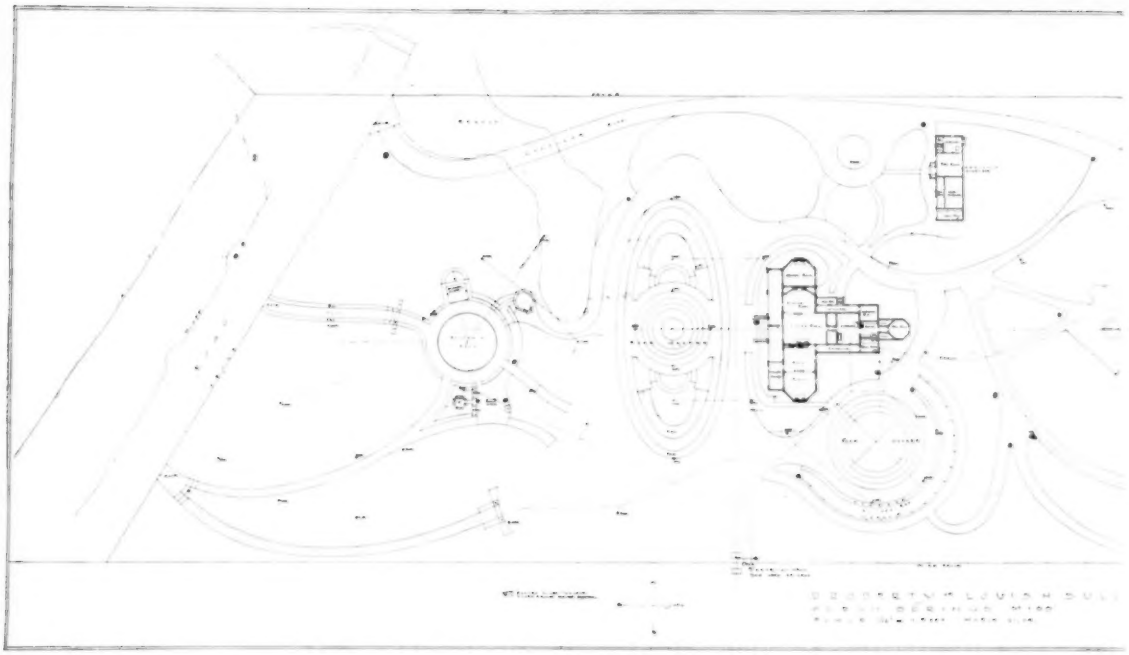
The Place of Louis H. Sullivan. Ocean Springs, Miss.



VIEW OF THE COTTAGE AND THE ROSE GARDEN IN THE EARLY SPRING.
The Dogwoods are in bloom and the Roses are just starting
The Place of Louis H. Sullivan Ocean Springs, Miss.

VIEW OF THE COTTAGE FROM THE RAVINE.

The Place of Louis H. Sullivan. Ocean Springs, Miss.

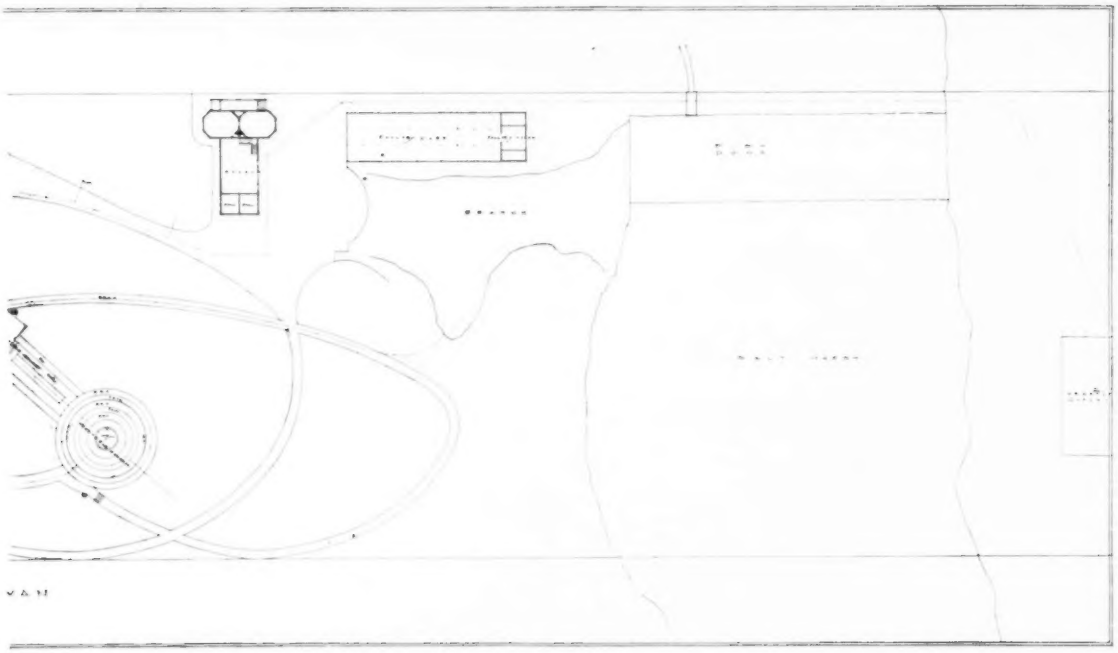


for constant observation, inspiration, and interpretation of natural phenomena, all to be duly assimilated and in time to appear in concrete forms of expression as fine art in buildings, highly conventionalized ornament, or as literary productions of exquisite worth.

The arrangement of the grounds, both in contour and contents, is the result of careful study and consideration. Each portion has been taken at full appraisement as to its value and position, and developed or left to grow in its natural state, with the idea of the utmost utilization of opportunity, not only in the preservation of all its most beautiful features and advantages, based on the soundest principles of modern landscape architecture, but also in the introduction of artificial requirements and embellishments, in which the hand of man is plainly evident.

The native forest has been touched only here and there to open vistas from the house to the waters of the bay, disclosing Deer Island, which, stretching out as a natural breakwater, prevents the incoming waves from reaching with too great a force, the beach and the oysters in their beds, clustered thereon. The trees tower aloft in all their native might. "The three Graces, the giant Twins," pines, live and water oaks, black-gums, sweet-gums, and hickories. To a lesser height are magnolias and catalpas, with their shinning leaves and exquisite flowers, wild-plums, glorious dog-woods, gleaming in snow-white profusion in the foreground or glinting their brilliancy amid the clustering trunks of the background. Nearer the ground, are the blazing colors of the wild honeysuckle and the magnificence of the azaleas. The palmetto with its highly decorative spreading forms a base for it all, and finally carpeting the ground with the green grass are the modest yet beautiful flowers of violet, white and red softening the tread of the foot on Mother Earth.

With companions such as these, some of many years' friendship, others of yesterday, one cannot fail to realize in its true significance the meaning of the word Growth; or not grasp the immense influence of such sources on a



mind which cherishes the close proximity of such specimens of Nature's handiwork and care.

Intimately associated with the possessors of masculine attributes of height and strength, are the more tender growths, embodied in trellised shrubs or clinging vines, growing in brilliant profusion of color; white or purple wisteria and honey-suckle, each dependent on some giant body on which to cling or climb; and the Spanish-moss hanging from some of the trees adds its patriarchal character to the scene.

The gem, however, of which all this gigantic and luxurious growth is but the setting, is the rose-garden in front of the house. There is also a smaller one on the east side of the cottage.

The main rose-garden is a series of concentric circles of beds and paths developing at the ends into elliptical forms and is about one hundred and sixty feet long. Many varieties are cultivated so as to make the blooming as continuous as possible from earliest Spring to late Autumn. Among others there are bushes of General Jacqueminot, Catherine Mermet, Paul Neyron, Marie Van Houtte, Mad. Lambard, Souvenir d'un Ame, Papa Gontier, all nourished with zealous care by the gardener and under the advice of the architect owner.

So from early Spring to Christmas the blooming fills the air with fragrance to be wafted away over the soft waters of the bay or to mingle with the odors of the woods.

Imagine the chromatics of such a bed of living color spread out before the eye—the delicate tints, which only roses can possess, blending with the many greens as the sunlight falls upon them, sifted through the great trees or sparkling with uncountable gems wherever the direct rays glisten the dew-drops.

So the roses bloom here in all their tendernes of budding and glory of fruition. They often grow to great size and beauty of color, and one bush of the Agrippina has been developed to such a height that a man standing beside it is dwarfed by the great growth beside him.

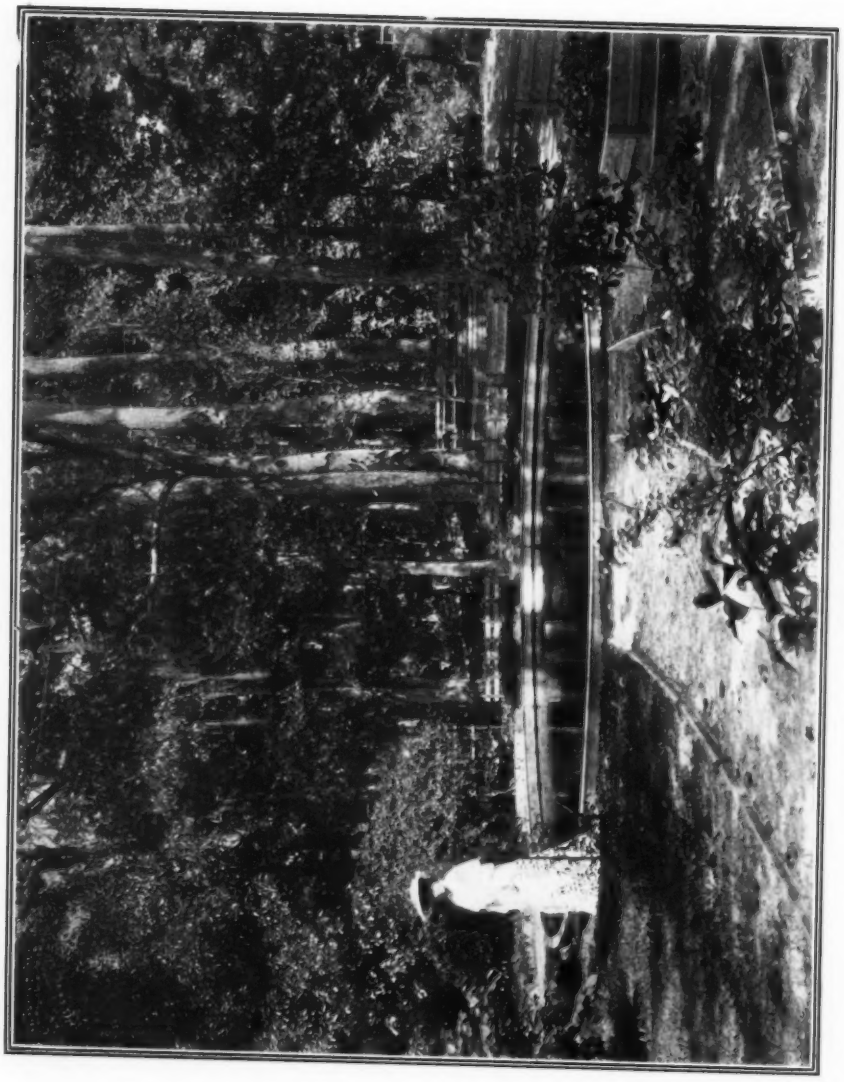
In spite of the fertility and vigor of the various growths, care has always

VIEW OF COTTAGE THROUGH THE TREES.
The Place of Louis H. Sullivan. Ocean Springs, Miss.

THE RAIN-WATER CISTERN.
The Place of Louis H. Sullivan. Ocean Springs, Miss.

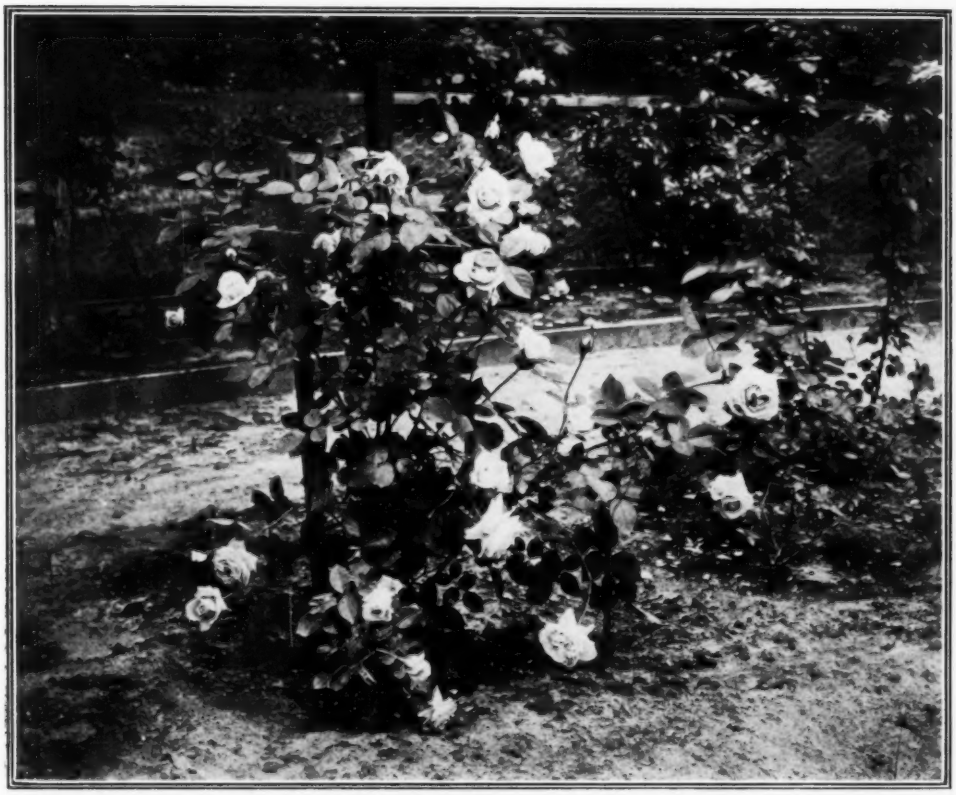
THE MAIN ROSE GARDEN FROM THE COTTAGE—LOOKING SOUTHEAST.
The Place of Louis H. Sullivan. Ocean Springs, Miss.

THE MAIN ROSE GARDEN—LOOKING SOUTHWEST.
The Place of Louis H. Sullivan. Ocean Springs, Miss.



THE POOL—LOOKING WEST.

The Place of Louis H. Sullivan. Ocean Springs, Miss.



A ROSE-BUSH—MRS. JOHN LAING.
The Place of Louis H. Sullivan. Ocean Springs, Miss.

been exercised that they should not greatly overrun portions of the grounds, and within two years considerable labor has been expended in giving the premises toward the entrances a park-like and more formal effect. To this end, the lower growth has been cleared away and a circular pool built some thirty feet in diameter and three feet deep. This is connected with the artesian-well which spouts from a jet in the middle of the mass of water. The waste from this pool is then discharged into a "branch," which occupies a portion of the grounds and around the edge of which winds the carriage-road with its circular turning at the servants quarters within easy reach of the cottage.

Around the pool are arbors, summer-houses and seats fitted with cunning little beds for flowers—these are all built of native cypress, and are of a novel and unique design. Even the restless may be lulled in a capacious swing hung from two of the ever-faithful trees.

The utilitarian features of this place have likewise been carefully considered. The water-supply is carried extensively about the grounds by a complete system of piping with numerous taps for watering the plants.

The sewerage from the house is conducted to a suitable distance and discharged into a portion of a salt-marsh running in from the bay in the rear of the premises; and there is an interesting vegetable or kitchen-garden laid out on a basis of concentric circles terraced down from a broad series of paths, and containing a fountain in the centre.

THE SMALL ROSE GARDEN—EAST OF THE COTTAGE.
The Place of Louis H Sullivan.
Ocean Springs, Miss.

There is a commodious house for servants with a quaint little entrance and seats, and the building ends in a latticed wood-house. Some way back is the ample stable with its arched entrance for vehicles, comfortable box-stalls, additional sleeping-rooms and the hay loft.

This is all designed in the simple manner of the house—yet all fitting for their use and from the hand of a master.

Back of the stable is the chicken-house and yard—protected from the marauding incursions of alligators by fence and screening.

ing even the delicate peach blossoms to shame, with dog-woods far and near shining in the sun, with laurel and rhododendron, is an intense and heart-gladdening sight, and a marvelous tenderness comes over one.

Then to pass into the sombre shades of the southern pine forests, bleeding their turpentine for man's use, and skirting the waters of the Gulf, to leave the world behind and sequestrate oneself in this garden of multicolor and form. The birds sing blithely in the trees—red, and blue and brown—warbling their notes in state of happy freedom. The

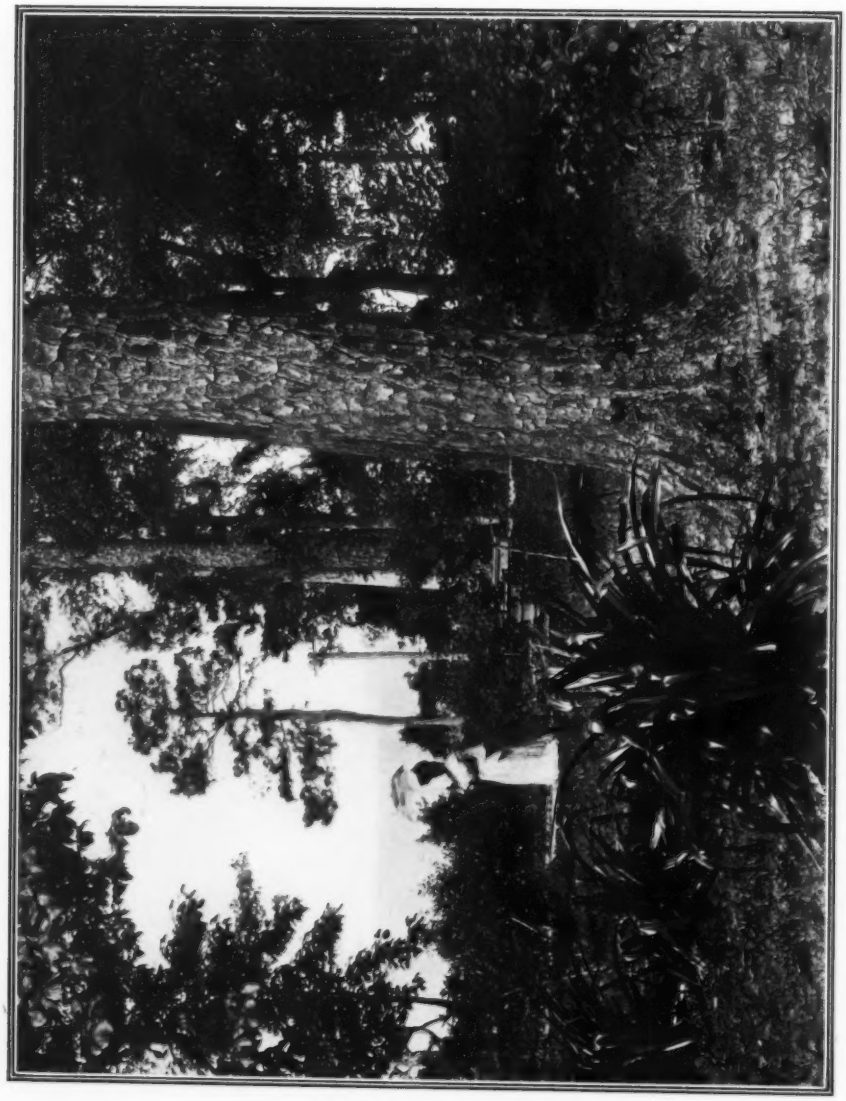
A ROSE-BUSH—BRUCE FINDLAY.
The Place of Louis H. Sullivan. Ocean Springs, Miss.

Then comes a pool of water some hundred feet long, in which there are myriads of gaily colored crabs. Across a small bridge, ascending ground takes one into the depths of the forest, where wild life grows unrestrained except in the paths leading to the rear of the premises.

To visit this place in the early Spring, coming from the North, causes one to truly realize "real spring." To leave the leafless trees behind and glide through a country of ever deepening foliage with a profusion of persimmon blossoms of a super-regal purple, put-

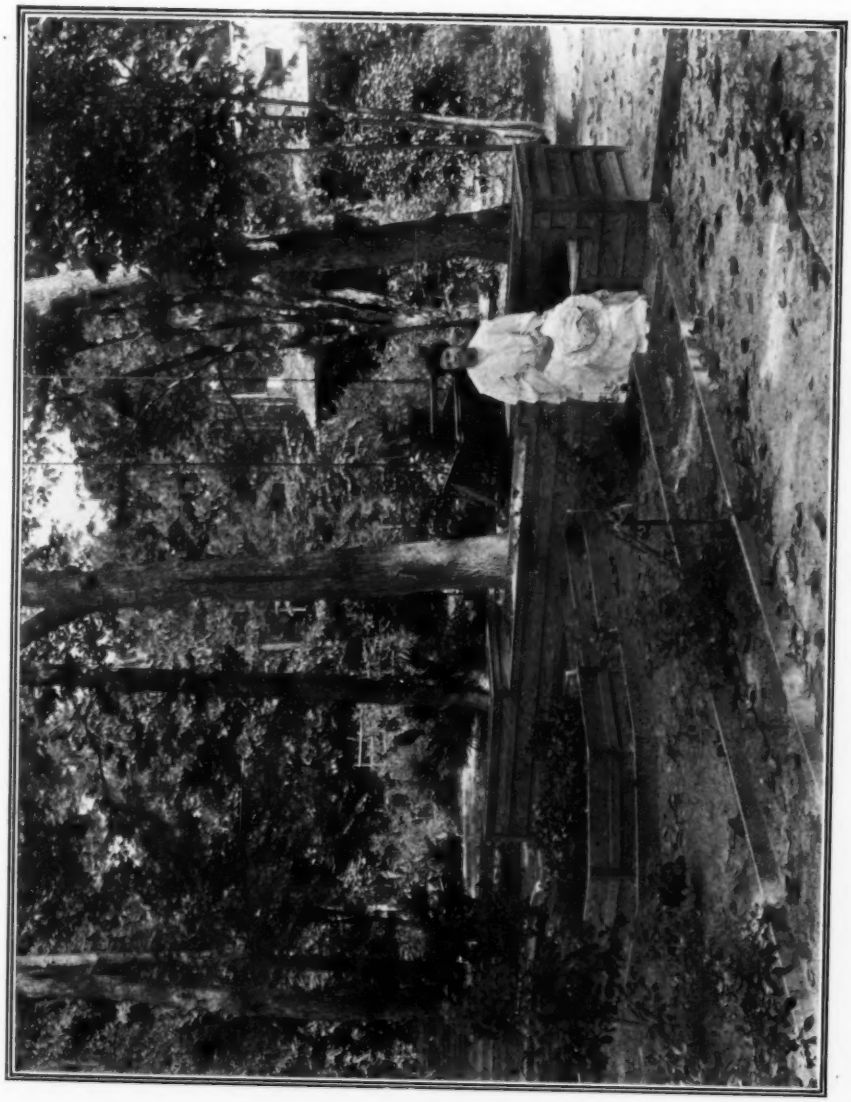
chameleons blink lazily in the sun, changing their colors with every mood. All life seems glad. Then to sit on one of the benches and listen to the murmur of the fountain as it leaps merrily above the pool; or to sit on the gallery above the roses and hear the waters of the bay as they indolently roll in and out lapping the sanded shore is to feel the great touch of Nature through the hand of the Infinite.

The old Mexican negro with red bandana tied around his waist and his blue overalls, a fine bit of "local color," works industriously as he trims the



BILOXI BAY—LOOKING WEST. Ocean Springs, Miss.

The Place of Louis H. Sullivan.



The Place of Louis H. Sullivan. THE COTTAGE—LOOKING NORTHWEST. Ocean Springs, Miss.

grass and borders; or picks the rose-buds that the fittest may survive. Now and then a cow munches herbage along the road. The old magnolia tree with roots exposed by the shelving bluff stands guard beyond his neighbors. A cat-boat glides across the bay with Old Glory flying at the peak. Then with this page of Nature's great open book spread out before the eyes, comes a realization that "only man is vile," and likewise much of his so-called architecture.

How can we leave the place knowing in full measure how much it has done for our Art; and go out again to where its influences have spread abroad, for from this little spot has emanated the results of reflection and communion with real things which has produced an invaluable contribution to our American Architecture.

Lyndon P. Smith.

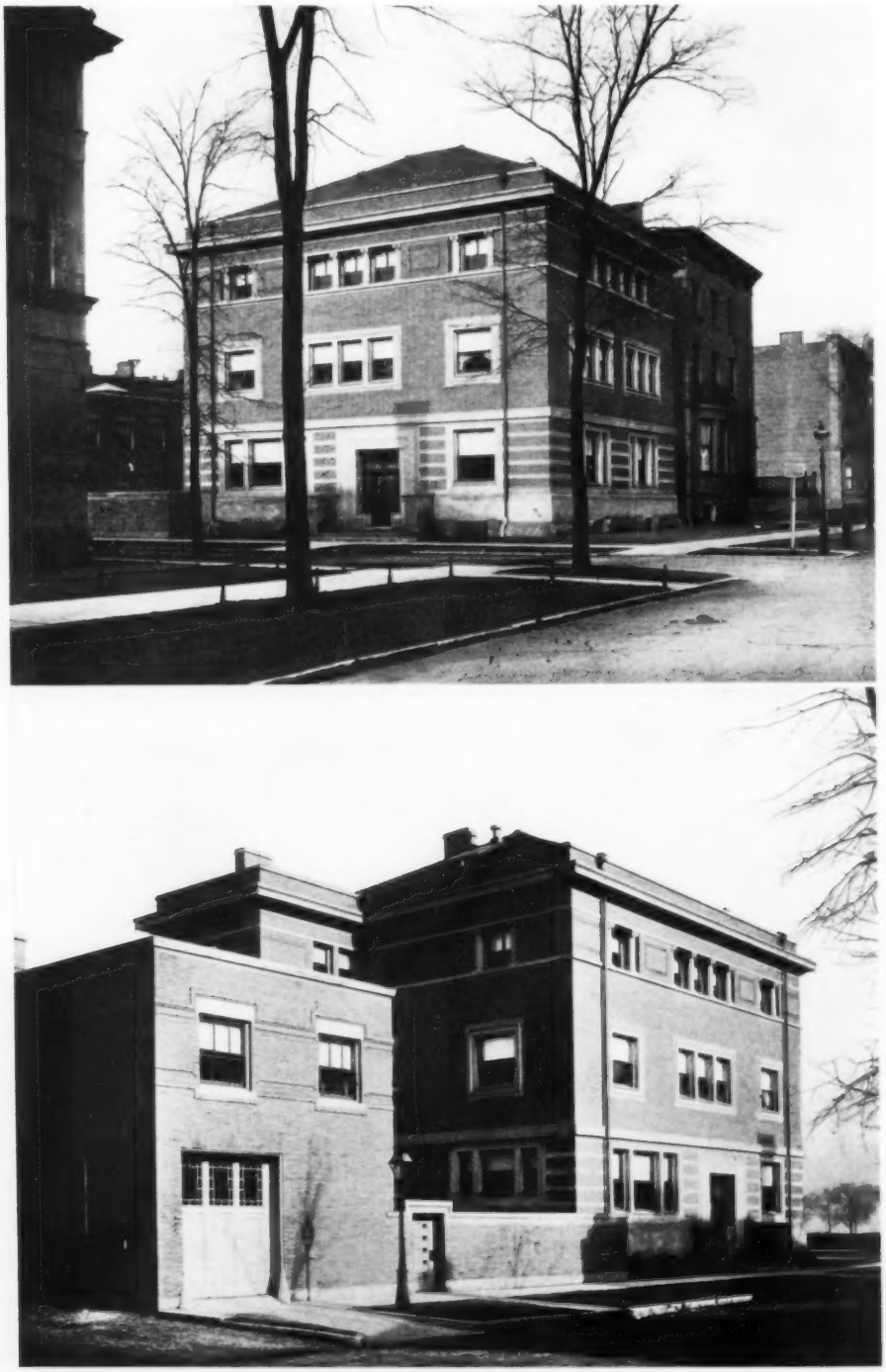
PORTRAIT OF MR. LOUIS H. SULLIVAN

The Madlener House in Chicago.

R. E. Schmidt, Architect.

The house at the corner of Burton Place and North State Street, Chicago, is of exceptional interest in its exterior design. We have two views of it, and a third photograph of details; and because it is an American dwelling house, after all, with no remarkable features in its plan and arrangement except the use of the third story as a large ballroom, it seems well to consider that exterior by itself. If, then, the reader will imagine that we are walking together along North State Street, coming from the south, with the Lake Shore Drive and the narrow park and the lake itself a little way off on the right hand—the actual shore of the lake being only a quarter of a mile distant—he will see the house in question as in Fig. 1. The street that runs crosswise, east and west, and reaches Lake Shore Drive, is Burton Place, and if we turn up to the left and walk along Burton Place for 200 feet, we reach the point of view taken by the photographer when he made Fig. 2. From this point of view it is plain that there are no houses built on the easterly side of North State Street, so that for a short time the inhabitants of this agreeable dwelling have a view of Lake Michigan from their eastern windows. There is, we note, a stable on the plot, at the edge of one of those curious alleys with which Chicago is furnished, and which, to the foreigner from New York or Boston, are a constant annoyance in interrupting his peaceful march along the sidewalk twice as often as it would otherwise be broken, and in being always muddy and ill-paved—forlorn breaks enough in what might be a pleasant promenade. But they are of unquestioned utility. I, who complain of them, have lived where they are in use, in Baltimore, in Philadelphia—there is no mistake about the expediency of using them to replace the hateful area entrance with its concomitant of ash carts and swill carts drawn up before it at most hours of the day, and perhaps growing civilization will make the alleys all that they might be. In the meantime we will note that the alley here was not needed to give to the dwelling an agreeable site, with windows on three sides and plenty of space between those windows and the nearest lofty buildings. The entrance is turned full south and the sun shining first into the eastern windows, then all through the middle of the day on the front, and again for an hour or two while westering, makes the house in every way comfortable and wholesome. And this abundance of sunshine has affected a little the conditions of the problem, in one very interesting particular.

That matter of relative size of windows to wall space is so very interesting to the designer that we really must consider the conditions attending it. I take a photograph of a very recent house in Florence, a house of some pretensions, and consider the entrance front of it, which has three windows in each story. This house is, naturally, of the grandiose old sixteenth century type. I note that each one of the three windows of the *piano nobile* is relatively as wide as each of the two end windows of the Chicago house in the corresponding story—the story first in the brick walls. Now, if we should assume that width to be four feet in Florence and five feet in Chicago, then the Florence window has a height of very nearly 8 feet (the measurements being taken within the cut-stone casing), while the Chicago win-



FIGS. 1 AND 2.—THE MADLENER HOUSE.
Burton Place, Chicago. Richard E. Schmidt, Architect.

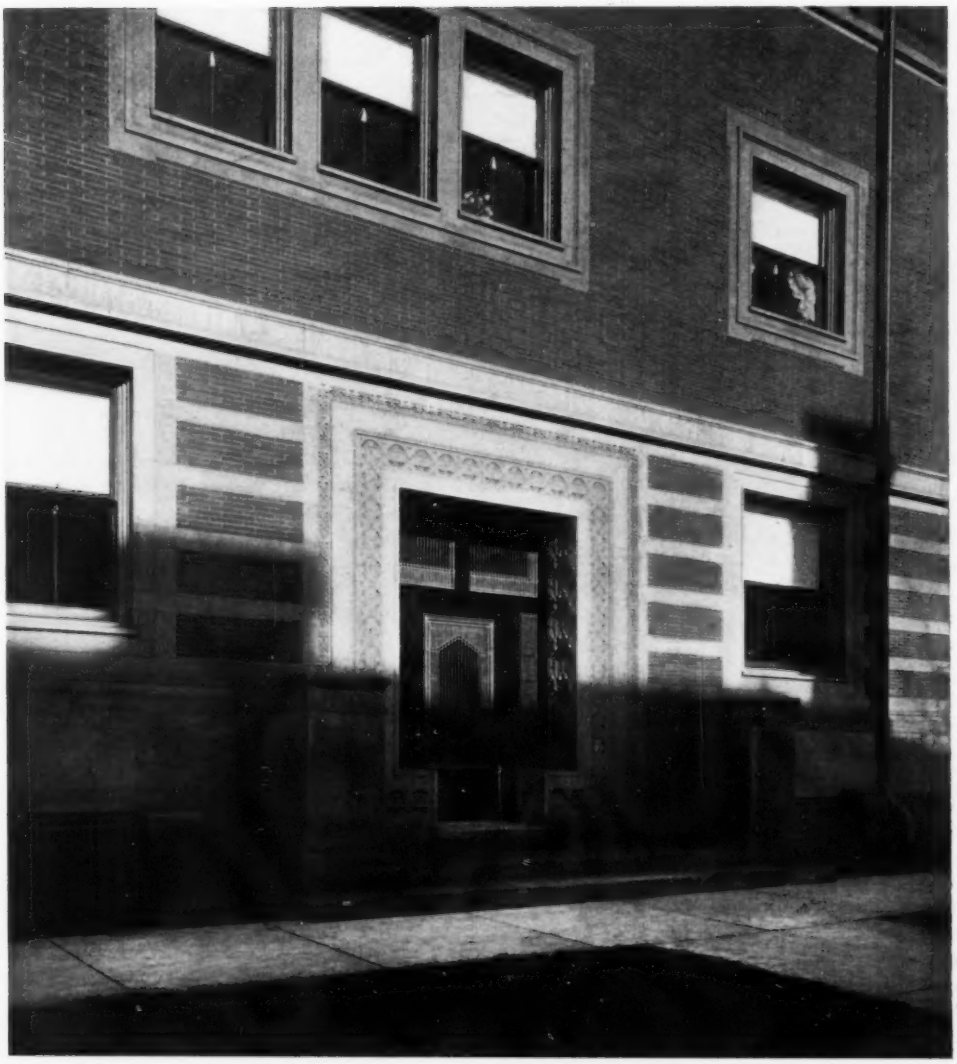


FIG. 3.—ENTRANCE TO THE MADLENER HOUSE.
Burton Place, Chicago. Richard E. Schmidt, Architect.

dows would have only a height of 5 ft. 8 ins. But if the Florence house is built with that traditional and accepted *grand luxe* of the Palazzo—of the villa—which consists in lofty stories, a tradition dating from a time when those stories were roofed with vaulting very commonly and much vertical space consumed in that way, the Chicago house is treated differently. It is not grandiose at all, nor traditional in design; the windows are put where they are wanted; and the question is whether they are also of the size wanted. The American and the Italian designer, each in his own way, has recognized the extreme value of broad spaces of wall, and has recognized that in no manner can those broad spaces be made so useful to his effect as where they are disposed between window-head and window-sill. In that Chicago house it would be better for exterior effect to put a narrow window in the middle of each pier than to diminish by an inch the width of the broad band above those windows. The mind can associate solidity and gravity and broad, sunny surfaces of wall with a building whose horizontal band of windows is an almost continuous arcade or series of openings of any shape divided by the merest mullions, but it cannot dispense with the broad band of masonry above the lintels or the arches and below the sill-course next higher in the front. So that the Chicago house is fortunate in its exterior design in just the way which is generally shut against effect in American exteriors.

But now when we think of the interior, are we satisfied to have the window-heads so low in the room? What is valuable in a window considered as a part of the interior treatment of a room is its capacity for admitting day light, and the upper half of it is worth many times as much as the lower half. A window of ordinary height, as in the room of the common dwelling house, a window which we may take as being six feet high in itself and with its head 8 ft. 6 ins. above the floor, has a whole row of panes of glass at a higher level than the highest glass of these large windows in the Chicago house. I am taking the windows of a very commonplace second story in a city dwelling, and we all know that these run very even. The head of the window opening is 9 ft. 1 in. above the floor in a story 11 ft. 1 in. high; whereas I cannot see that the window-heads of the rather stately Chicago house are more than 8 ft. from the floor, either in that story first above the ground floor and assumed to be the most important architectural story in the house, or on the ground floor, where, it appears, the living rooms are placed.

The reader will understand that I am merely setting down what seem to be the facts, and commenting on them as the expression in solid form of a taste which is not often gratified in our American house fronts. It is perfectly admissible, altogether praiseworthy, to employ these means for securing the admirable—the desirable—effect in the exterior, of which there has been mention above; but it is always interesting to note what you lose when you start to gain something; and in this case you lose the most valuable part of the daylight, namely, that which comes from the sky itself directly through the top of your window when that window is of the usual height. If your house is full of works of art you suffer the more from this horizontal admission of light, which in that case comes by reflection from the lighted surfaces around—house walls chiefly—and hardly at all from the sky. A house so well situated as this, with windows on three sides, is exceptionally well off, but even this fortunate condition will not give us what we want, the light taken straight from the blue sky above. Accept the situation manfully! Make no complaints nor bear on hard in your criticism. The architect and the owner together have a perfect right to say what they will sacrifice for the sake of something else. Of the persons who consider this subject with me, one will say at once that he could not endure these conditions for a moment; that at any cost, any injury to the exterior, he would cut those windows higher and would, while he was about it, bring

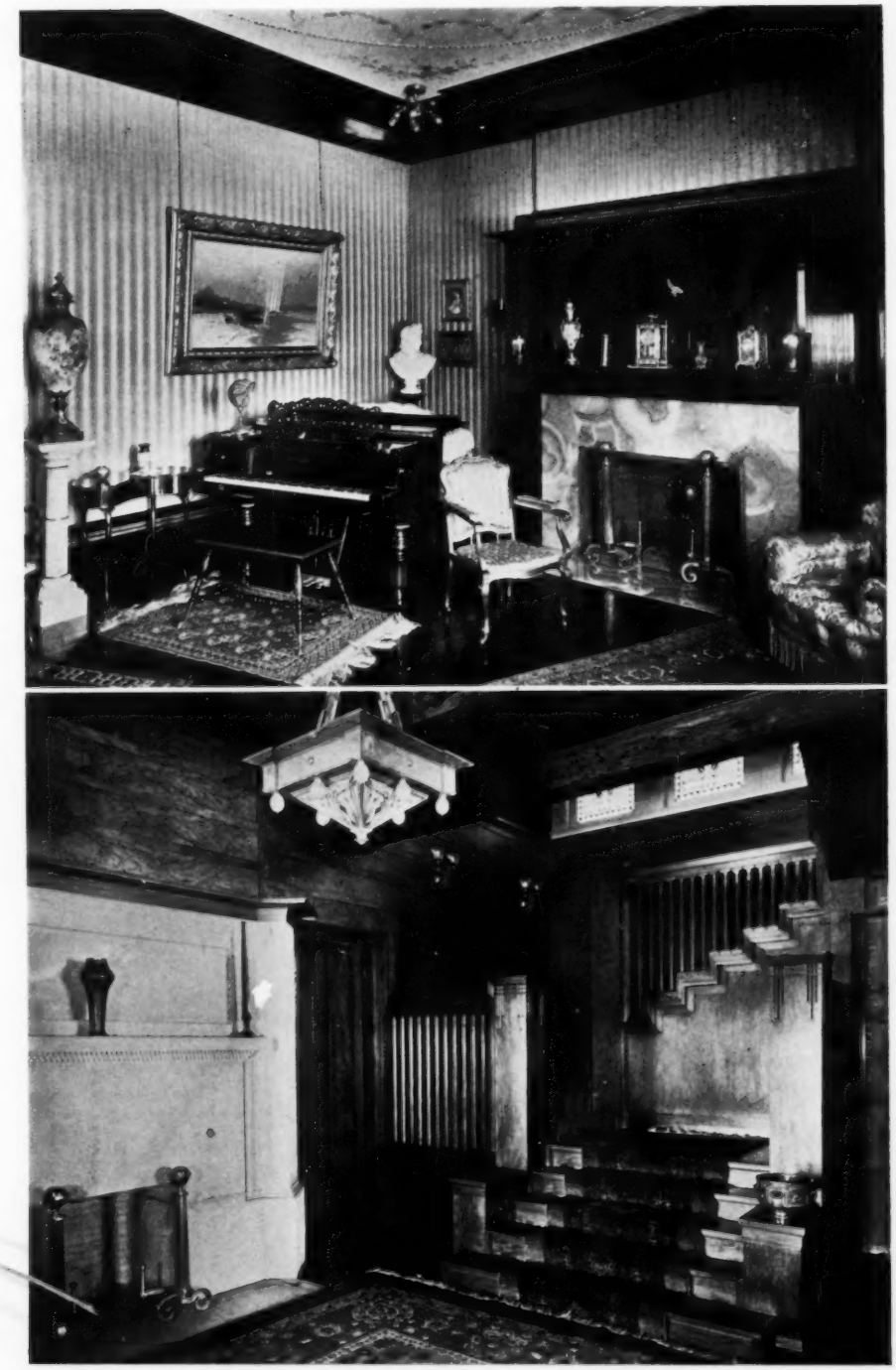
FIGS. 4 AND 5.—THE LIBRARY AND THE DINING-ROOM OF THE MADLENER HOUSE.
Burton Place, Chicago. Richard E. Schmidt, Architect.

them within 18 ins. of the ceiling.* Another will, of course, say that he sympathizes with the persons who are responsible for the design which we are considering; and this is the mood of those who care greatly for external architecture considered as a matter of delicate proportions. In this matter, too, the treatment of the exterior in the way of color bands is fortunate, and helps the general design. The stone is Indiana limestone of the warmer hue, "buff Bedford stone," whereas that in the Schoenhofen Brewery Company's building (see the March number of the Record, p. 201ff.) was blue Bedford stone. The warm-colored stone is of a finer grain and is a very admirable shade. Our photograph No. 3 shows the delicate carving of the doorway jamb and casing alike and from these it is clear that the sandstone in question is an excellent medium for sculpture.

Fig. 4 is the only one of the interior views which shows at once a window and a door. But this one is sufficient to explain a reason which seems to have influenced the architect in the fixing of the horizontal line of the window-heads. It is noticeable in this photograph that door-head and window-head are on the same horizontal line. Now if one is determined to get that valuable feature —that equality of height which certainly tends toward simplicity of design, he must be prepared to suffer for it. Nothing so good can be had without a serious loss. The rule in our houses is to have doors perhaps 8 feet high in the clear and windows as high as the ceiling will allow them to be, and nearly all of our interiors are arranged with an acceptance of that peculiarity. One designs a frieze to be painted upon a wall with an express provision for the doorway coming below it and the window-heads cutting into it—or else, if the frieze is much narrower, it is fitted in above the window-heads and a separate over-door panel is arranged above the head of the doorway. The room shown in Fig. 4 seems to have the head of its door and window alike at 7 feet 6 inches above the floor and this, while it is good for the door is, according to one point of view, at least two feet too low for the window, if we are safe in assuming that there is now more than four feet of wall space above that window-head. The room is seen in the photograph to be full of light, for the large window or windows which are not shown in the picture are admitting the light in great volumes, which is reflected and reflected again all about the room, especially upward from the floor and table and downward again from white or light-colored plaster ceiling. But in practice the delicate paintings on the walls cannot be receiving an adequate or an approximately uniform daylight. There are certainly many who would feel that no exterior effectiveness which is at all possible in a simple brick house without elaboration and without rich details of mingled sculpturesque and architectural effect, could make up for this diminution of precious daylight.

Fig. 5 shows the dining-room, while Fig. 6 on the next page shows the music room with its piano and striped wall-paper. And now it may be said that internal evidence arranges these rooms as follows: all being on the ground floor, then this ground floor is a few steps higher than the sill of the entrance door; in fact there is evidently the equivalent of a stoop between that entrance doorway and the vestibule and doorway within. The large room shown in Fig. 4 occupies the southeast corner; that is to say, the large single window on the right hand of the entrance door is at one end of it, and the triple window seen in Fig. 1 in the front facing the lake is in the middle of its long side. The

*It is sometimes urged that in a richly furnished house the top of the windows will be covered up with curtains in any event; but that is not always true. It was true perhaps, forty years ago; then the curtains were fixed once for all to their "cornices" and were separated at a height of four feet from the ground, making one of the ugliest shapes possible where they cut off the light of the window, viz., a high triangle with concave sides on a low rectangle; but that is so no longer. The rule now-a-days is to have the curtains on rings—that is to say, the curtains of heavy stuff. And assuredly where the owner has pictures or water-color drawings or bronzes or delicate porcelains to show he will want strong daylight upon them.



FIGS. 6 AND 7.—THE MUSIC ROOM AND THE HALL OF THE MADLENER HOUSE.
Burton Place, Chicago. Richard E. Schmidt, Architect.

music-room, then, is next north of the large room and has another corresponding triple window on North State Street. The dining-room occupies the southwest corner; it has the double window seen in Figs. 1 and 2 and also the triple window seen in Fig. 2 and looking out upon the back yard. And we have only left to mention the photograph No. 7, which shows a part of the hall and the beginning of the principal stairway, as these possibly would appear to one who had passed up the inner stoop and through the vestibule door and entered the hall from the south. The fireplace, which is built of the same stone as that used for the exterior, is on the left, and on the western side of the person so entering the house the first step of the stairway is to the north of him and in face.

It has been suggested above that the merit of the exterior is chiefly in its carefully considered proportion. It lacks something in lacking chimney-tops, for a dwelling-house of decorative design without really aggressive chimneys always seems to need an assertion of its hospitable possibilities of warmth. The missing chimneys, moreover, cannot be replaced by any study of the photographs — where are the flues, where are the chimney-tops belonging to the large fireplaces shown in Figs. 4, 5 and 6? But this accepted and the house taken as a study in proportion as if for a warmer climate than Chicago, one where fires are scarcely required for interior comfort, the outside of the house will bear very close study as a piece of proportion, and as a piece of impressive design within simple and indeed obvious limitations. Let anyone consider, for instance, the immense gain there is in the absence of all area, all open trench about the house, all appearance of a pit in which the house seems to stand. The greensward comes up to the water-table smoothly, the water-table has a great projection (seems to have 16 inches offset with a curved and moulded wash) and this carries a dwarf basement wall, a kind of podium without windows, from which another moulded offset recedes to take the face of the basement wall proper. That basement wall, then, is banded with stone in such a way that the bands of the harder material look like binders and tie the lower story of the house together in a thoroughgoing fashion. The top story, too, the uppermost row of windows low and small and evidently reaching only half way up the height of the large room which is probably "domed up" to fit the size of the great room for entertainment, has those windows so well tied together with stone courses at head and at foot, that the house finds itself divided in this way into a series of horizontal bands of extreme solidity of appearance. The result of this is that the unsupported, unattached windows of the middle tier may float as they please on the sea of brickwork and they will not seem to lose their anchorage and to float away. In all these respects the design commends itself as that which could best be asked for and could most readily be given in the case of such a dwelling as the one before us.

Russell Sturgis.

Some American-Made Fabrics.

Europe and the Orient no longer have a monopoly in the production of tapestries and rugs of surpassing excellence. Both are now being made with great success in America, and it is the purpose of this article to tell a little of the way in which these important industries were started on this side of the water and to describe and illustrate some of the better examples of both tapestries and rugs.

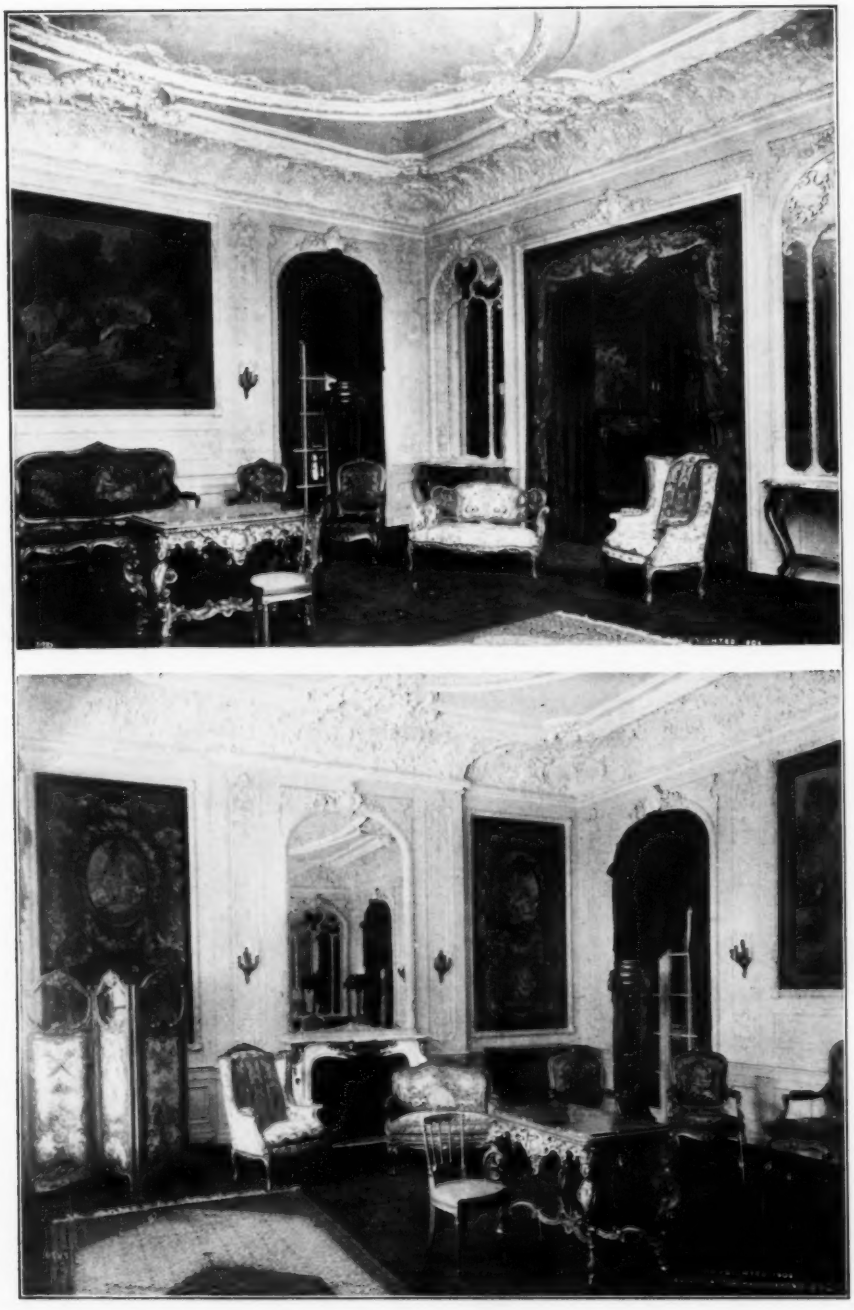
The credit of introducing the art of tapestry-weaving into the country undoubtedly belongs to Mr. William Baumgarten. In 1893 a single loom was set up in New York and the experiment made. The workers for the first attempt were secured in France only after much difficulty, but finally a sufficient number were brought together to make a start, and the work was begun with much enthusiasm and with promise of success. A year later, when it became apparent that larger quarters would be needed, it was decided to move the entire plant to Wiliamsbridge, which was accordingly done and a factory building with ample provision for future growth was erected. The selection of this site for the enterprise was most fortunate, as it was soon discovered that the waters of the Bronx, which flow past the door of the factory, possessed most excellent qualities for dyeing. These same qualities were found in the waters of the river La Bièvre in the Fau'b St. Marcel, near Paris. Here the Gobelins located their dye works in the fifteenth century, that golden age of tapestry-weaving which has left such a priceless heritage. The present Gobelin works have, however, long since ceased to use the water of the river, as it has become entirely unfit because of impurities, and it has been found necessary to supply by chemistry qualities which the Bronx possesses.

The tapestries made by Mr. Baumgarten compare most favorably with those produced elsewhere. Indeed it has often been alleged that the weaving of these fabrics was actually done abroad. A number of large and beautiful pieces, designed and woven for the residence of Charles M. Schwab, were exhibited at St. Louis during the Exposition. The works has grown to such an extent that at the present time the factory contains 36 looms and employs about 75 weavers. Engaged not only in the manufacture of tapestries, but of fine carpets as well, made after the manner of the well-known hand-made Aubusson carpets—and this brings us to the second part of our subject, American made rugs.

From the Orient, whence rugs have come for many years, still come many and beautiful examples of the weaver's art, both modern pieces and those fabrics which have had a place in mosque or palace, and which are classed under the general head of "Antiques." In the shops of the big dealers in Oriental carpets one can find a large number from which to choose, and the colors and designs of many of these Eastern gems are a delight to the person who is furnishing a living-room, den or hall. But, as must inevitably be the case, antiques are becoming more scarce each year, and experts realize that no longer can the far East be depended upon to supply all the fine carpetings needed by architects and decorators in the furnishing of residences, hotels, clubs, houses and yachts. The looms of Europe in part make up the deficiency, many of the hand-tufted rugs for the houses of the wealthy being made there—often after special designs of the decorator. But now there are rugs being made in America, and a little history of this branch of American industry may be of interest to those who have always associated the far East with the word "rugs."

That some of the rugs made in the United States are as distinctively American as a Tabriz is Persian is perhaps

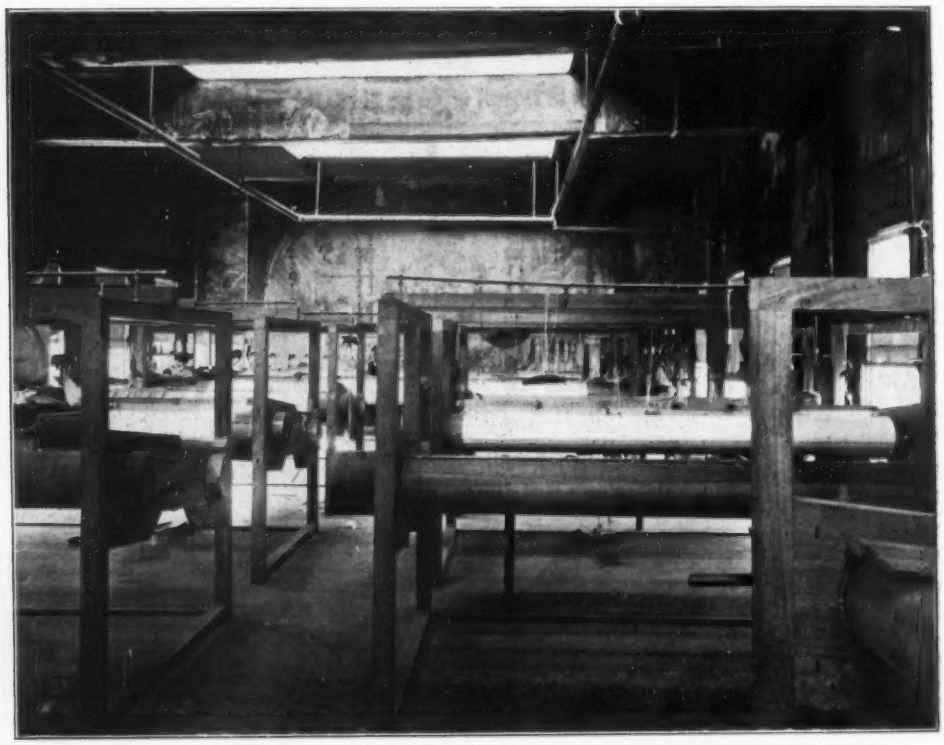
AMERICAN MADE TAPESTRIES EXHIBITED AT THE LOUISIANA PURCHASE EXPOSITION.



TAPESTRIES MADE IN AMERICA, EXHIBITED AT THE LOUISIANA PURCHASE EXPOSITION.

not generally known. The value of the Navajo blanket as a rug has of late years come to be quite generally recognized, and precedence must also be accorded it as the first American rug industry. These fabrics, woven by the Navajo Indians, can be traced in their development through the Aztecs to the Spaniards who conquered Mexico, and through them in turn to the Moors who introduced as conquerors of Spain the art of rug-weaving from the Orient. While some of the modern Indian blankets are well made of good materials, the older ones, many of which are perfectly preserved, were of a finer texture, and of better color and design. The Indian unfortunately has learned the use of Aniline dyes, and a few years ago it seemed as though the blanket would become practically worthless. Some earnest workers have, however, interested themselves in the cause, and now again the Navajo is being produced of good wool well dyed with vegetable colors, made for the most part from barks, roots and berries.

In introducing the Indian blanket into a room as rug, couch-cover or hanging, it must be allowed to dominate the color scheme, as its brilliant color, often scarlet, refuses to be subjugated by anything which the decorator can devise. Well used it is very effective in a den, living-room or billiard-room.



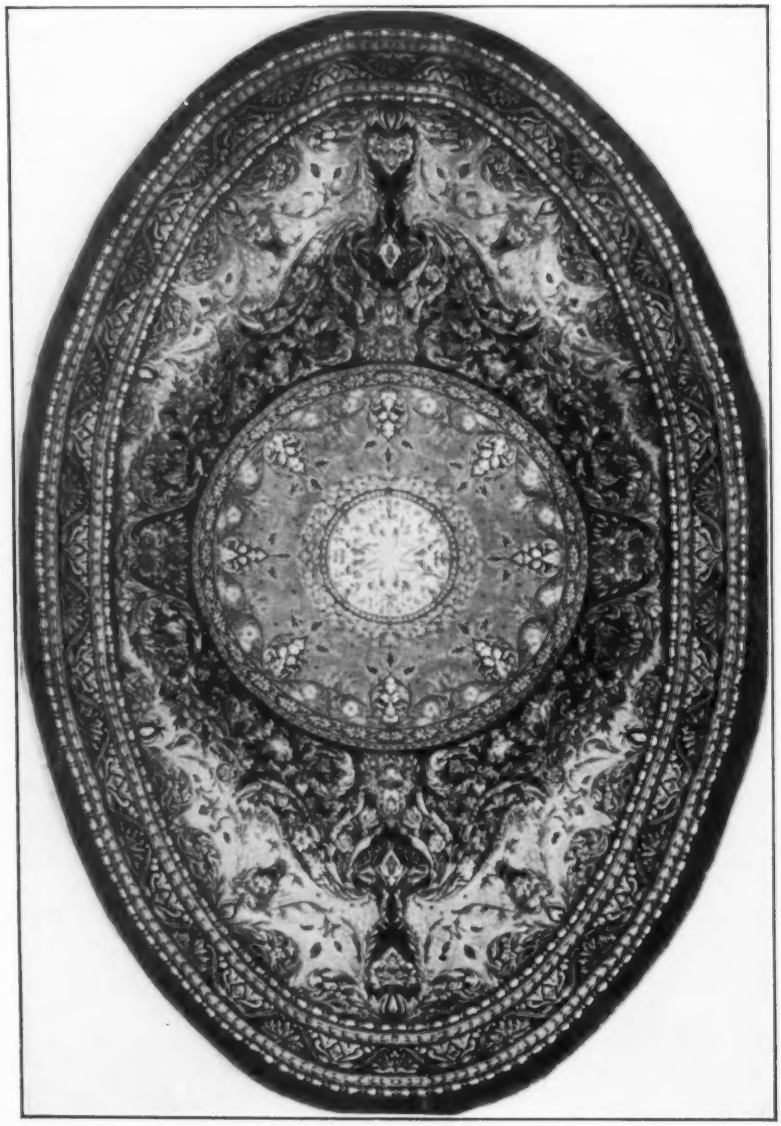
THE TAPESTRY FACTORY AT WILLIAMSBRIDGE.

Other rugs which demand attention because of the conditions under which they are produced as well as because of their merit, are those made at Berea College in Kentucky, the Abenakee woven by New England women under the direction of Miss Helen Albee, and rugs made under the supervision of Douglas Volk, the artist, at his country

home at Centre Lovell, Maine. The Kentucky rugs are woven by mountain women on looms very much like the old rag carpet looms, of a material resembling coarse bed-ticking, dyed with indigo, madder and other native vegetable colors. The designs are similar to those of the Indian blanket, but they are made in a greater variety of colors and are well suited to summer cottages, bedrooms and other places where an expensive floor covering is not needed. The Abenakee enterprise was started by Mrs. Albee only after great difficulty, as she found it almost impossible to interest the necessary workers in her project. The quiet colors which she offered did not appeal to the women of the New England towns, they preferring something lively and more striking, and characterized the rugs made after her pattern as being a "sinful waste" of good materials. Finally, however, they were prevailed upon to make the trial, which was an instant success, and from that day the Abenakee has had a place all its own. In a letter Mrs. Albee states that this work has now been started in some form in almost every state, having been taken up by art and industrial schools, and in some cases by state and county institutions.

PAINTING CARTOONS FOR TAPESTRIES.

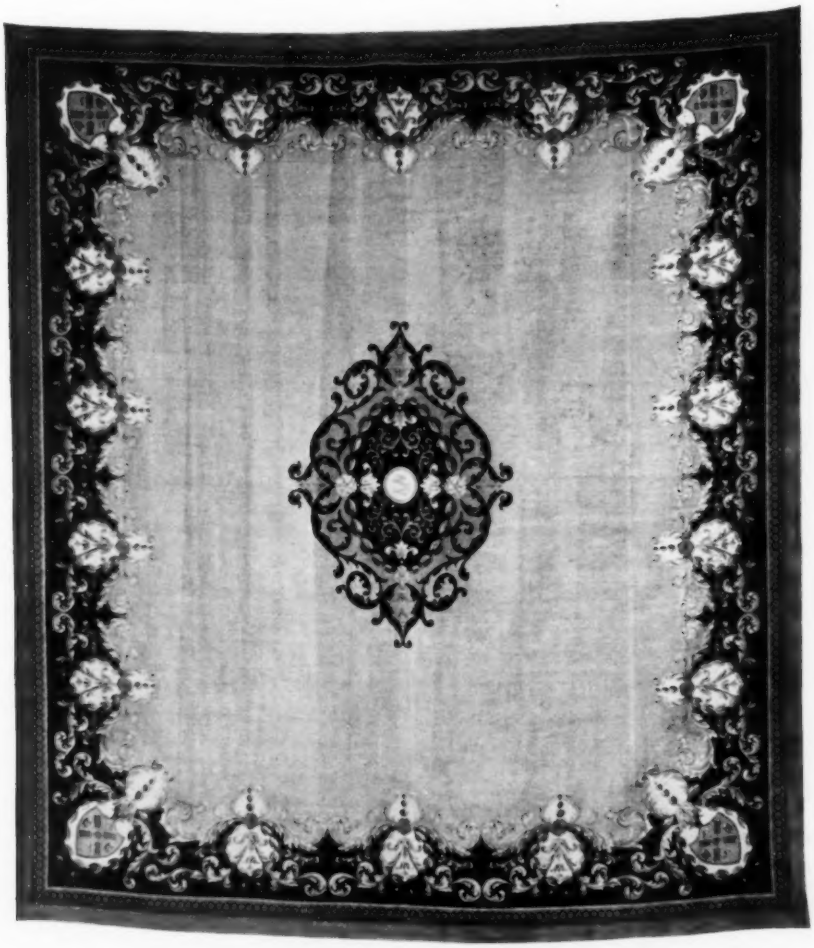
The name Abenakee is taken from an Indian tribe, of whihc the Pequakets were a branch. Thus the name is identified with that of the village where this industry was started, Pequaket, New Hampshire, and also in this name are these rugs proclaimed American. The rugs made under Mr. Volk's direction are meeting with great artistic success, and in design and coloring are suggestive of many of the most beautiful Oriental carpets. Mr. Wendell Volk, a



PERSIAN RUG OF AMERICAN MANUFACTURE.
This rug weighs over 200 lbs. and took five months to make. It measures 15x27.7.

son, has taken a great interest in the loom work, and has developed that phase of it to quite an extent and has taught it for the past two years at the Teachers' College in New York.

The Navajo blanket and the rugs made in these little communities in various parts of the country are interesting and valuable as far as they go, but the very circumstances of their manufacture limit the facilities at the disposal of the workers. We now come to consider an enterprise of an entirely different sort, which, founded on modern commercial lines, has had a very different development. Twenty years ago, two Germans introduced the making of hand-tufted rugs in America. The project was started in Milwaukee, to which place were brought looms and experienced workers from Germany. The keen business sense which showed to these men the opportunity for success in rug weaving in this country held them to their task, though they met with much discouragement at the start. After two years of struggle in Milwaukee and constant effort to overcome prejudice



PERSIAN RUG OF AMERICAN MAKE.
Size, 23x25. Made for the Mayor's Reception Room, in the New York City Hall.

PERSIAN RUG OF AMERICAN MAKE.

This design was derived from an old Chinese vase in the South Kensington Museum. It is used on a stairway leading to a room containing the collections of an Oriental enthusiast.

against the American-made rugs they removed to New York, then, as now, the art centre of America, and interesting some wealthy connoisseurs, formed the Persian rug manufactory with works in that city. Up to this time the designs of the rugs from their looms were not pure nor the coloring harmonious, the former showing a mixture of medieval and German Rennaissance, not Gothic. It was soon proven that the time and money put into this enterprise had not been futile, as it was the entering wedge, and the public was in a measure prepared for improved products, which this company then put upon the market.

The Austrian Government Oriental Rug Exhibit held in Vienna in the year 1892 made itself felt throughout the world through its Edition de Luxe published by them at that time, showing prints and color reproductions of all that is finest and truest in Oriental carpets. Its publication proved a crisis for the Persian Rug Manufactory, and dating from the time of this exhibit correct designs and colorings came from their looms. Soon after this they sent their first exhibit of rugs to the Architectural League of New York, and to other similar exhibits in other cities, and a place and name was theirs, which has since stood from much that is best and most artistic in floor coverings.

When, not many years ago, the demand for period-furnishing began to make itself felt, it was decided to reproduce some of the most intricate and many shaded patterns in Chenille Axminster. The designs used in the time of Francis I., Henry II., the Louis, and the Empire demanded this new fabric. This departure was also successful, and the results well received, the demand increasing steadily. The architect or decorator of to-day is thus enabled to give the same consideration and obtain the same results in the color and quality of his floor coverings as in the textiles that he uses upon the walls. The trend now is so much for rooms in which the woodwork in wainscot and beams form the wall and ceiling decoration, that it is left

to the floor covering to strike the color note for the whole. For Elizabethian, Tudor and Georgian rooms rugs of correct design and coloring are made. Germany, France, Italy and indeed all countries and periods are drawn upon for designs. In the past three or four years a great interest has been aroused in the old Chinese rugs. These are characteristic and most interesting, and so closely are the really fine and old ones guarded by the families to which they have belonged for generations, that it is rarely one is found beyond the walled cities of the Flowery Kingdom, and in this country they are seldom to be seen outside of museums. Faithful copies of some of the finest of these have been made, which offer many of the best qualities of the originals.

The beautiful two and three toned rugs, in which the centre field is plain with darker borders, are particularly suitable to modern schemes of furnishing, which fittingly express the architectural meaning of rooms designed by leading architects and decorators. Rugs such as these add to the apparent size of the room. They are woven entirely in one piece, and of any size or shape that the dimensions and character of the room may require, and in any thickness up to an inch, in various qualities.

The dyes employed are wholly vegetable and fascinatingly soft and beautiful in tone. The dim old shades of the veritable antiques are secured without subjecting the rug to the heroic treatment which is said to be the lot of many of the imported ones.

It is interesting to note that as the standards of taste advance, as they are certainly advancing with respect to house decoration and furnishing in the United States, architects are more and more taking over the interior equipment of the rooms designed by them.

In these rugs, made here in our own country, can be found almost anything which the architect may need. Is a rug of a certain color and size wanted for a certain hall? Perhaps the dimensions are unusual or the colors difficult to find or both. To secure such a one ready made might mean an almost endless search. To be able to order it direct from domestic looms in the required design means a saving both in time and money.

For many years these rugs have been in use, standing the test of time satisfactorily, and undoubtedly the demand for them will grow, as people learn that those of American manufacture may be as durable and as artistic as the ones made in India, China, Persia or Turkey.

Margaret Greenleaf.

THE RESIDENCE OF J. R. DE LAMAR.
Madison Avenue and 37th Street, New York City. C. H. P. Gilbert, Architect.

Need of Fireproof Country Homes.

The construction of fireproof country homes represents the highest development of modern architectural and engineering art, for it requires the blending of the artistic and beautiful with the substantial and enduring. The destruction of country homes by fire forms a sad chapter in the history of the modern evolution of the home; but the loss of the houses probably represents less actual sorrow than the destruction of the interior furnishings and personal treasures. A man spends a life time of travel and study in the collection of rare curios, pictures and art treasures only to place them in a wooden shell, which within a few hours may burn to the ground. No money compensation can replace such priceless possessions, and the insurance money is a poor return for what represented so many years of toil and pleasure to collect.

The country home need no longer be built of wood, nor of other flimsy material to invite disaster. The age of fireproof homes has come for the country as well as for the city—for the poor as well as for the rich. Two things have heretofore militated against the general construction of fireproof homes outside of large towns and cities. One has been the cost, and the other the question of artistic excellence. Both of these objections are removed through the invention and construction of fireproof materials which are cheap in price and can be made artistic in treatment.

A country house can be built of modern fireproof material at a cost not much greater than that required for a wooden house, and the architectural features need in no way be sacrificed in the interests of permanency. Fireproof tile or burnt-clay material is moulded in all the forms and shapes demanded by architects so that any design can be followed closely. The artistic effect may be quite as beautiful in such a structure as though the house were made entirely of wood. The cost of hollow tiling for house construction purposes has steadily declined in recent years in about the same proportion as the price of lumber has advanced. The employment of labor-saving machinery for moulding and drying the clay tiles has worked changes in the industry that promise great things for the future.

A number of houses have recently been completed in Pittsburg which are fireproof and ready for occupancy; they cost $4,500 each. Before the contracts were let, open bids were made for their construction, and the lowest of these for wood in place of fireproof material were $4,000 and $4,125. In Washington a fireproof house that cost $5,186 had one bid for the old-fashioned wood framing at $5,875, reversing in this case the general idea of the cost of the two classes of houses. As a rule, however, the fireproof house costs from 5 to 8 per cent. more than wood frame houses in the country. This may be figured out as follows: The ordinary floors of rough wooden timber, with 12-in. joists and a top floor of finished pine, costs about 28 cents a square foot. This is the kind of floor used in the cheapest class of dwellings. In higher class city houses a couple of inches of cinder concrete are placed between the floors to deaden sounds, and a narrow strip maple flooring put down instead of pine. This brings the cost up to about 40 cents a square foot. Similarly partitions of two-by-four wood stud, with wood lathing both sides and plastered, cost about twenty cents a square foot. Such prices differ somewhat in various parts of the country according to the price of lumber and labor, but it is only a matter of a few cents per square foot in any case.

Fireproof construction of heavy tile flooring, finished with incombustible plastic flooring, such as granolithic or asbesto-lithic, with the underside of the floor plastered, costs from 26 to 30 cents

per square foot. This means the very best work, finished in the most approved style. If modern hollow tiles are used for the partitions and plastered both sides, the average cost will not exceed 20 cents per square foot. Such floors and partitions will be not only fireproof, but practically sound-proof and vermin-proof. Brick and terra cotta exterior walls cost a little more than wood, and this part of the house would raise the average price five per cent. higher, except in localities where brick and terra cotta materials are cheap. In a number of the states manufacturers of both brick and terra cotta building material guarantee to supply their products at the same cost per square foot as good seasoned lumber.

Once satisfied that fireproof country homes can be constructed in the most artistic way at nearly the same cost as wooden houses, the public will quickly perceive the value of houses which will protect them from fire. The wooden house represents a crude stage in the art of building; it is little better than a shell that is subject to injury by fire, storms, and heat and cold. It cracks and warps in summer and winter; it permits wind and snow to creep in; it decays rapidly in all climates, and when fire once touches it complete demolition follows. Insurance rates are so high on country wooden homes that not more than a small percentage of the owners feel able to carry full insurance on the risks. The life of a modern wooden house may be anywhere from fifty to a hundred years —the latter being reached only where annual expenditures are freely made to protect it from the elements and ordinary wear and tear. The early colonial buildings owe their long life to the careful selection and drying of the hardwood timber obtained from the primeval forests. There is very little such lumber to be obtained to-day, and when it is offered for sale, prices are almost prohibitive.

Therefore, it is hardly possible to construct wooden houses to-day that will last as long, and prove as serviceable, as those which the early settlers built. Each year the supply of adequate material for wooden houses of permanent value diminishes. The only possible solution of the question is to turn to the brick, stone, and other fireproof material manufactured so abundantly in this country. At the best the home becomes an imperishable monument to the skill and wisdom of its builder.

The general comfort of the modern country fireproof home must also be considered. This is no unimportant feature of the new field of architecture. The housewife will appreciate a home whose walls are practically sound-proof, moisture-proof, wind-proof, and vermin-proof. The air space between the walls of the hollow tile deadens sound and minimizes every jar and vibration so that the ordinary noises which disturb those with sensitive nerves are not present. Outside noises are also lessened to a degree that is highly satisfactory. But the question of sound-proof is probably of less importance to the country dweller than to the city inhabitant, but there are other qualities which appeal to the rural inhabitant.

In winter the burnt-clay walls, with their system of hollow tubes running between them, are better protectors against wind, snow, rain and cold than wooden walls, while in summer the heat is equally tempered to a much greater degree than in the ordinary house. This is no question of guesswork, but of actual test. The saving on the coal bill for heating such a fireproof house runs from twenty to thirty per cent. In addition to this the saving on insurance risks is sufficient to form a considerable item of economy in the course of a few years. In exposed parts of the country where the winter winds are peculiarly severe a wooden home is a temporary and insecure habitation.

Burnt-clay products are manufactured in a great variety of shapes and sizes for building purposes. The art and science of to-day are converting these into building materials that eclipse anything heretofore invented by man. Machinery and improved methods of manufacture are more than counterbal-

ancing any increase in wages. The supply of raw material for these fireproof materials is almost unlimited; the exhaustion of the clay pits and mines appear as improbable as the exhaustion of our coal mines. Somewhere in the next thousand years or more there may be a dearth in the available amount of clay suitable for manufacturing into building materials. In the past twenty-five years lumber has advanced over one hundred per cent. in price, and in the next half century it may be expected to make an equally startling change.

The country home built of hollow fireproof burnt-clay tiles is not only a protection against fire, but it serves to add permanency and substantial endurance to the home which cannot be obtained in wooden structures. A man builds a fireproof house for all time, storing his art treasures and books in it for future generations, knowing that he will leave behind him a visible token of his life as expressed in such rare collections. There is a stimulating ambition to collect and gather for those who are to follow. The dread of fire loses much of its terror, and penetrating it appears almost impossible to keep the temperature of west and northwestern rooms high enough for comfort. Modern fireproof buildings properly constructed facing lakes and the ocean have amply proved the superiority of this mode of building. In the summer season the heat enters the house much slower when built of hollow tile. Summer cottages built by the seashore are thus made cooler in hot weather and less liable to deterioration by the salt air. The saving in paint in such cottages is an item of no insignificant importance.

The ordinary wooden house offers every inducement for vermin to breed in the walls and partitions, and that they do it in nearly every home is quite evident. In the burnt-clay walls there is no chance of mice or other vermin finding lodgment. It is impossible for them to gnaw their way through, and there is no inducement offered when they once get inside. Consequently, the fireproof walls are practically vermin-proof, and residents in the country find one of the most troublesome nuisances thus eliminated. From a sanitary point of view the fireproof structure is pre-eminently desirable. Any overflow of sewerage, water from drain pipes, or waste fluids of any kind, can be carried away without staining and soaking into wood work. In the case of contagious diseases the tile walls offer no lodgment for germs, and when the sick rooms are properly cleaned and disinfected the house is as pure and healthful as though sickness had never visited it.

The modern fireproof private residence in the country is built without expensive steel and iron framing. It is the elimination of the steel part that has made it possible to construct private residences at a cost no greater than that of wood. While the large city houses and commercial buildings require the steel framework supports, the country house is spread over so much ground, and offers so little actual resistance surface to the high winds, that its stability and permanency are not weakened by the absence of steel columns and frames.

Both the partitions and outer walls are built of hollow tile, which are locked together by modern inventions so that they are more solid and substantial than the wooden frames of houses. The latter will warp and shrink, but the former do neither. The floors are also built of hollow tile, supported on the partitions of the same material, and joined together at the ends, corners and sides by steel interlocking inventions which make a perfectly indestructible joint. With the floors forming a solid block of hollow tiling that are absolutely fireproof, dust-proof, sound-proof and vermin-proof, the home becomes a permanent structure that may well be termed indestructible and imperishable. From the roof to the basement, the building is built of fireproof tiling, and a conflagration once started in it could easily be confined to a single room.

It may not be desirable to observe the same precaution in a private residence as in a public one, and the equipment of the interior can be made to suit indi-

vidual tastes. It is generally sufficient that the walls, roof and partitions are made of fireproof material. The furnishings of the interior can then take whatever form and character desired. Wood trim, doors, closets and dadoes can relieve any austerity of design that may have been imparted to the rooms by the fireproof material. But even this is unnecessary. Perfect imitations of wood carving are made for trim, doors, ceiling and dadoes, so that it would require almost an expert to detect the difference. Both warmth and artistic beauty may be obtained in using fireproof material and metal for nearly every part of the interior trim. Metal-lined, fireproof doors are manufactured to imitate carved wooden ones, and they open and close with as much ease and noiselessness as those built of hard or soft wood. Metal ceilings that are as artistic in effect as any designed in plaster are attached to the overhead tiling, and they have the advantage of never falling or cracking, while in times of fire they would offer a stout resistance to the spread of any flames.

The old flimsy wooden firetraps of country homes are thus nearing the end of their reign, and from the cities the craze for building fireproof, permanent structures will quickly extend to the country. In the next decade the building of anything except fireproof residences may become prohibitive within the corporate limits of a city as to-day it is to construct anything but houses of brick or stone. Similar building laws may not be adopted in the country districts, but as a matter of self-protection and self-interest the individual builder will learn to resort to such perpetuation of his home structure more and more as he realizes its value.

The whole question of home building in the country and suburbs is undergoing rapid evolution and change. Life in the rural districts is made comfortable and home-like only through proper building of houses, which will be as convenient and comfortable as city habitation. The electric cars and improved methods of rapid transit cannot develop the country for all-the-year-round living, unless the character of the homes is consistent with modern needs and demands. The heating, lighting and protection of the rural home are matters of absolute importance, and to their proper solution must the future of rural communities look for future growth and expansion. The cost of heating in fireproof homes is rendered so uniformly economical that nearly all systems of steam, furnace or hot-water must eventually be planned with special reference to the construction of walls, ceilings and floors.

Likewise the lighting of individual houses that are absolutely fireproof requires less expenditure in equipment. The wiring of such buildings is rendered peculiarly simple and economical for the simple reason that little inflammable material comes in close contact with the wires. The use of insulation is thus greatly lessened, and the danger minimized. Even with the best of insulation, fires from electric wires are started if inflammable material is placed anywhere near the circuits. By inclosing the wires in fireproof hollow tile floors or walls, the danger from fires even when wires are short-circuited is almost infinitesimal.

The sense of safety and security of life and property are after all the most important asset that the individual householder can possess. Peace of mind makes the home a place of comfort and happiness. The fear of fire and loss of treasures must always prove irritating and unpleasantly annoying. The practical elimination of such fears from the mind adds contentment that few other gifts can give to our lives. In the past the city inhabitant, living in his fireproof office buildings, hotels and apartments, has possessed this priceless sense of security; in the near future the individual household of country and city may gain the same protection and permanent peace of mind and spirit.

Geo. E. Walsh.

NOTES & COMMENTS

A WAREHOUSE IN JERSEY CITY.

In the Architectural Record for February, 1904, Vol. XV., pp. 131, 132, there are descriptions of two warehouses built by Mr. Jarvis Hunt, the architect, for the firm of Butler Bros. Those warehouses are in Chicago, and stand in that crowded and mercantile section of the town which immediately adjoins the Chicago River, the real harbor of the port. Now Fig. 1 presents a photograph of a similar building designed by the same architect for the same owners, much in the same style, but not further away from our publication offices than Jersey City. This retention of a style of design once fairly accepted is an excellent thing, which speaks well for the strength of purpose and consecutiveness of mind of the architect and of the owners. But there was also mention in the article referred to above of a warehouse in Chicago designed by Mr. Hunt, which seemed at the time more attractive even than those of Butler Brothers. This was the Kelley Maus Building, and the photo-

FIG. 1.—THE WAREHOUSE OF BUTLER BROS.

Jersey City, N. J. Jarvis Hunt, Architect.

Photo by A. Patzig.

graphic illustration is to be found on page 133 of the volume named. And it is pleasant to see that the best characteristics of the Kelley Maus building are reproduced in the Jersey City warehouse, which is now before the reader—see Fig. 1—combined with what was most important in the design of the twin warehouses at Chicago. Color is not the prominent feature in the Jersey City building, and in place of it there is used that breaking out of masonry of common square bricks, into shadow-casting string-courses, with and without the alternation of dentils with flat wall, with which motif we have grown familiar, lately, in studying the buildings of several other architects, especially those of Mr. Richard E. Schmidt. Remembering always that there are such things in the world as moulded bricks, and that they are not expensive to produce or to deal with in actual practice, one is still glad to see this constant recurrence of experiments with the ordinary hard brick of commerce. The very best is done with that not very promising material, and the reiteration of such designing is an admirable thing, helping greatly, as it does, in our slow advance in intelligent design as a rule of daily practice.

In all these buildings, eastern and western (if Chicago indeed be a western city), there is to be noted a rejection of any theory concerning the lintel-construction of the brick walls. What is the system of building? How does the square head of the window maintain itself and carry the superincumbent weight, slight as that weight may be—the weight of the bit of wall between lintel and sill which is perhaps eight feet high where the unbroken bands are widest? Of course our modern manufacturers of metal offer at low prices the old-fashioned cast-iron lintels, and, at a higher price, the more truly economical wrought-iron flange-beam. But if this device is used, it can appear only to those who approach it close and look up at the soffit of the window head. It cannot show in the photograph, and it is therefore beyond our ken.

That the whole design is not clear to the one who views the building from without; so far the design is faulty. That the building would be in every way bettered by strongly marked lintels, or by flat arches with slightly radiating brick voussoirs, becomes evident by taking it as it is and assuming the presence of an adequate non-concealed support for the wall above the window-openings. It is still a most interesting exterior. The brick cornice of very slight projection, just enough to carry and conceal the gutter, harmonizes with the general scheme of the brickwork as neatly as that of the Chicago twin buildings, and better than that, because having to start from no diapered colored wall, but piers deeply recessed with decorative brickwork. It is to be noted, too, what an excellent doorpiece has been made, by simply projecting a part of the brickwork eight inches, with an offset of that depth on either side, and with some mouldings to disguise it at the top. R. S.

THE CARLETON BUILDING.

Notes and Comments this month must find room for comment upon two buildings not highly architectural. Each has its peculiar and very marked connection with the building of the New Time, in which steel does the work, and masonry does the filling and the covering—or most of it. But each attacks the problem in a way very different from that followed in the other design.

First, of the Carleton Building in St. Louis, that of which the sign over the door, dimly made out, is "Carleton Dry Goods Co." In this building the structure seems to be perfectly well accepted as the motive for design, except only in that framing of each of the great wall spaces, to which motive there has been reference in former notes. As perfectly as in the Monadnock of Chicago, and in the Prudential of Buffalo, the steel columns are marked by their prolongation through the show windows below, up to the brickwork jackets above. As perfectly as the most ardent realist could desire, the windows and the thin panels between, taken vertically, are recessed between the square projections of the brick columns. The corner piers are emphasized by the brick-moulded or terra-cotta ornamentation of the arris itself, and the subordinate decorated mouldings, one on either side; and it is not until the eye reaches the top of the main wall, 120 feet or more above the sidewalk, that these subordinate uprights are mitred and go off horizontally, as described below. Again the attic story, itself a row of windows, of full size and occupying panels between great consoles which carry the overhang of the cornice, is a well-imagined culmination of the growing design; larger in its parts below, growing smaller as it ascends, and ending in this ten-foot story of strongly marked horizontal limitations. If, instead of a photograph, there were offered to the reader a slight outline drawing of the structure, it may well be thought that these truths only would be not-

BUILDING OF THE CARLETON DRY-GOODS CO.
St. Louis, Mo.

able in its external aspect, and then there would be nothing but praise for it, because indeed the bare and blank surfaces of the architectural basement—of the two lower working stories—can only be accepted without comment as the necessary treatment of a business building with a retail side to it. Where you must show your goods to the passer-by, most other considerations have to give way. And so if this photograph be looked at from a distance so great that the student cannot see the smaller details, he, the student, would feel that he had a good thing before him—a really attractive business building. The mischief of it is in the things which are intended for ornament, which, whether they are of thin cast iron or still thinner zinc or tin, are detestable in form and in the leafage and scrollwork with which they are charged.

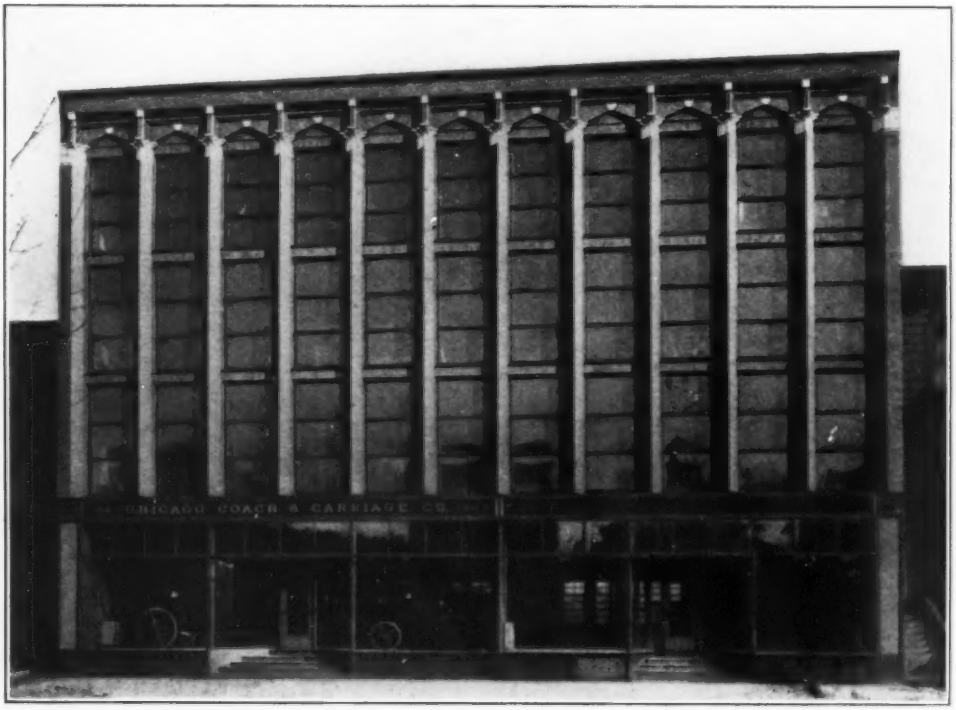


FIG. 3.—BUILDING FOR JOHN H. WHITTEMORE.
Chicago, Ill. Dean & Dean, Architects.

One word about the treatment of the two visible walls as each a framed picture. In dealing with the Schoenhofen Brewery, in the March number of the Architectural Record, it was suggested that this survival of an old decorative impulse was unfortunate, because the larger the building is, the more this framing of each of its walls tends to make those walls look as if they were about to separate at the corners and fall forward, each into its own street. In the Carleton Building the matter is greatly helped by the strong horizontal line at the top, the line made by the projecting wall, with two square edges and the face of it, at least twenty inches wide, adorned with a sort of fret. That band goes for much, and the great shadow of the cornice counts for even more; but those details are far above the eye, and the surbase of the architectural basement story, that on the frieze of which is painted the letters of the sign, is a great way from the top, leaving the framed wall of which we treat apparently unsupported. It is possible, indeed, to make too much of this peculiarity in a design, but it is not worth while to mention it at all unless it is explained in full. It does not keep the building from being attractive, but it takes away from its permanent charm, as depriving it of unity and of something of its apparent solidity.

The corbel-like ornament at the head of

the piers and supporting the first projecting string-course, the little sculptured masses upon them, with cartouches and capital-like topping out of each of the brick coverings of the steel columns, and finally the main entablature, with its enormous consoles, its unevenly spaced lion-heads above, its anthemion triangles rising against the sky, is all of it poor, and lacking in significance, unfortunate in separate design, and in its effect upon the whole mass. It is hard to see a fine design so marred by superfluous ornament tacked on to the otherwise completed building.

THE WHITTEMORE BUILDING.

The other business building to which there was reference at the beginning of the previous note, is indeed a complete contrast, for here the practical requirements have governed everything, and the structure shouts itself aloud. This is the Chicago building of which one-half, on the ground floor, is occupied by the "Chicago Coach & Carriage Co.," and it is called here the Whittemore Building, from the name of its owner. Here every practical consideration is allowed its full weight. The wall is all glass except for very slight lintel courses three times occurring in the height above the store-front. The piers in which are concealed the steel columns are splayed on either side, so that all possible daylight is obtainable. The piers are seen to carry at top low arches of triangular form, of brickwork with keystones of white material, and between these are uprights like triglyphs, which undoubtedly have to do with the structure. The brick projecting wall above this may be taken as a mere masking of the gutter.

Now there is no one of these features which, when occurring in his own practice, the architect of our time should not study carefully and treat of as great importance to his design in metal-framed building. It is far better, more dignified, more worthy of an intelligent man to treat them as crudely as they are treated here—even this—than to ignore them altogether and to cover them up with the details of a sham neo-classical façade. Still, the purpose of the artist will be, of course, to make them into themes for his decoration; he will see in them opportunities for design. To turn them out of doors without artistic treatment, as is done in this front, is not architectural. This, of course, is no reproach to the designers of the building before us; the owner and the architects between them have a perfect right to reject from their programme architecture in the usual sense of the word as decorative building, and to offer such a front as this instead of one more elaborately composed. The comments here are descriptive merely—are accounts of what is to be found in the front before us. And it is to be hoped that Messrs. Dean & Dean will have another such chance to build a perfectly realistic business front, and will then be inspired to take the next step in artistical progress and to *design it*, making what is here a mass of unrelated parts, all valuable and necessary in themselves, into an artistic construction. R. S.

SCULPTURE IN TOWNS.

A recent article in "The Craftsman," on municipal sculpture, roundly scored American cities for neglect of this form of civic art. It is hardly to be supposed that cities can be scolded into successful art attainment; but as far as sheer neglect goes, there are indications that the article, if not somewhat out of date to begin with, is now getting very much so. The acquirement of several interesting pieces of sculpture by towns and cities has been chronicled in this department in the last few months, and the movement goes steadily forward. At the annual meeting of the Fairmount Park Art Association—that remarkable municipal art society of Philadelphia which has more than $100,000 in its permanent fund—the principal address was made by Mayor Weaver and was a plea for the erection of a monumental fountain in the courtyard of the city hall; in St. Louis the Civic Improvement League early took steps to obtain for the city some of the sculpture of the exposition; in Baltimore it is announced that a fountain and statuary are to be features of the park in front of the new custom house; while in little Palladium, Mich., the newspapers—directly stirred, it is said, by "The Craftsman" article—have been agitating for a grass plot adorned with sculpture at the beginning of the principal street. Who would have thought of Palladium taking the reproach to itself! and who can avoid a sense of dread at small towns "going in" for sculpture? But the affair is quite reminiscent of the spirit of the Renaissance, and the news that a Chicago lumber merchant has left to the Art Institute a fund of $1,000,000, of which the interest is to be spent for the erection and maintenance of statues and monuments in the public places of Chicago, is quite worthy of the merchant princes of Florence.

THE LAZARUS SCHOLARSHIP.

The committee in charge of the Jacob H. Lazarus scholarship, for the study of mural painting, has sent out an announcement that the triennial award is due again this year. The winner of the competition, who must be an unmarried male citizen of the United States, will be sent abroad for three years on a sum of $1,000 a year. The first thirty-four months must be spent in Italy. The winners in the past have been, respectively, George W. Breck, A. T. Schwartz, and Robert K. Ryland, all Southerners. The members of the committee are Frederic Crowninshield (chairman), J. Carroll Beckwith, Edwin H. Blashfield, George W. Breck, A. D. F. Hamlin, Francis C. Jones, George W. Maynard, A. T. Schwartz, and Edgar M. Ward. Candidates must notify Phillip C. Süs, National Academy of Design, by October 1st.

CONFERENCE OF CIVICS.

The department of congresses of the Lewis and Clark exposition in Portland, announces a conference on civics, to be held from August 14th to 22d. On the first three days problems of general interest will be presented and discussed. On the succeeding three days there will be held meetings, attended by representatives of the incorporated cities of the Pacific Northwest. At these, concrete problems in municipal government will be considered. The program may be summarized as follows: First day, How to fight corruption in cities; second day, Social betterment work (including the suppression of vice and the control of the liquor traffic); third day, Municipal improvements, (a) practical, (b) æsthetic. Specific matters that are to be considered on succeeding days are: The organization of a League of Northwest Cities, home rule, the control of corporations, municipal ownership, taxation, accounting, and administrative law. This is a pretty full program. One can hardly expect vital contributions to any of the subjects in the brief time allotted to each and amid the distractions of an interesting exposition. But the constructive work promises to be the organization of the League of Northwest Cities, and in subsequent meetings time may be had for deliberation. The League of California Municipalities, indeed, is one of the most successful in the country, for new civic ideals are thoroughly at home on the Western coast.

ABOUT GLASS HOUSES.

An architect in Des Moines, Iowa, Mr. C. B. Eastman, has been trying to persuade the Des Moines National Bank to erect a new building which the bank proposes to build, out of wire-glass. His plan of glass construction consists of two walls of opalescent wire-glass attached to a steel frame work. The walls are approximately a foot apart, making between them an insulating air space to prevent the loss of heat in winter and an excess of heat in summer. The advantage of this method of construction would be, according to its inventor, that windows could be completely dispensed with, which would give the architect a fine opportunity for an efficient interior plan and an interesting exterior design. In a city like New York in which light is so valuable, glass construction would have the additional advantage of providing all the light which was necessary.

It is not, however, the wire-glass house as a system of construction which interests us in this connection. As a system of construction there is much that is dubious about Mr. Eastman's idea; but should it ever be carried out, it would be an enormous success as a breaker of proverbs. There is a proverb, for instance, with which we are all familiar, to the effect that people who live in glass houses should not throw stones; the idea being that the habit of throwing stones, in case it became general, would be a bad thing for glass houses. But if the new system of wire-glass construction should become general, there would be more reason why a bank president, who was preserved in a wire-glass house, should not be as free to throw stones as if he lived in a brick house. The habit of throwing heavy stones is, of course, to be discouraged in the interest of the owner of any house; but a stout piece of wire-glass construction would not be damaged by small stones, and the proverb might be changed to the effect that people who lived in wire-glass houses should not throw big stones.

There should be no objection to a sensible modification of the proverb, because it has on occasion already been tampered with. A New York wit has suggested that the most necessary precaution for a person who lived in a glass house would be to pull down the blinds. But here again the proverb-maker was leaving out of account the wire-glass house. A bank president, or a life insurance director, who lived in a wire-glass house need not pull down the blinds. Indeed, he

could altogether dispense with them. The wire-glass wall would conceal his private transactions for him quite as effectually as if it were made of stained glass or of brick. Such is the effect of new inventions on time-honored precepts.

WASHINGTON ADVISORY BOARD.

In a discussion, technical and quite incidental, concerning the compensation of the "consultative board" which the President appointed to pass upon the location and plans of public buildings in Washington, the newspapers and the people lost sight of the true significance of the move. This is curious, for the appointment added an interesting chapter to the efforts in behalf of a more beautiful Washington, and the members of the board were perfectly willing to serve—as they now may—without any compensation. In an executive order, issued March 14th, with the approval of the Cabinet, Mr. Roosevelt created a board with whom, "whenever discretion is conferred by law on the head or heads of any department, on the Commissioners of the District of Columbia, or on any other executive officer or officers, to fix the exact position of a public building in the District of Columbia and to approve the plans for the same, he or they shall confer." The order continued: "It is intended through the recommendations of the board to bring about harmony of design in all future public buildings, and conformity to an artistic system of improvement based on the original plans for laying out the capital. The examination of the board of architects should be confined to the location and the artistic effect of the exterior of the buildings." The appointees to the board were the members of the Washington commission of experts, plus Bernard R. Green. But even without the names, it is clear that the President's purpose was to block the way to such performances as that of last year, when a desperate effort was made so to locate the new building for the Department of Agriculture as to intrude it a hundred feet into the Mall, planned by the commission to extend from the Capitol to the Monument. This was the feature of the plan upon which the hardest work had been put, for this the Pennsylvania Railroad was to be removed, and to ruin it would be to defeat the commission. Yet only an energetic protest, started by the A. I. A., but eventually representing the artistic intelligence and public spirit of the country, frustrated the scheme. The truth is, the House has from the first been jealous of the expert commission, because the latter is a Senate creation; and the President, realizing this from last year's episode, has taken this means of enforcing respect for its decisions, while his executive order recreating it, changing its name, and making a single addition to its personnel, made it possible for the House to defer to it without violating self-regard. In doing this, Mr. Roosevelt gave evidence of his sincerity when, in addressing the Institute a few weeks previously, he had announced his great interest in the plans for a more beautiful Washington. As for the controversy which so successfully distracted attention from the really interesting feature of the order, it may have been started in an effort to checkmate the President's move. The order stated that the members of the board should serve without pay. It was pointed out that such appointment was illegal. It was then ordered that its members be paid $10 a day while actually serving. The salary could not be paid, it was said, without congressional appropriation, and under the circumstances that was doubtful. Accordingly the President then announced that he would call the appointees to the White House, when ocassion arose, to confer with him, merely as public spirited citizens; and that he would be guided by their advice. This was not a very substantial basis for the board, though it promised to answer as long as Mr. Roosevelt was president. Lately, however, an anonymous assertion has gone out that Mr. Cannon has said he would accept the situation and allow the Congressional authorization of the consultative board.

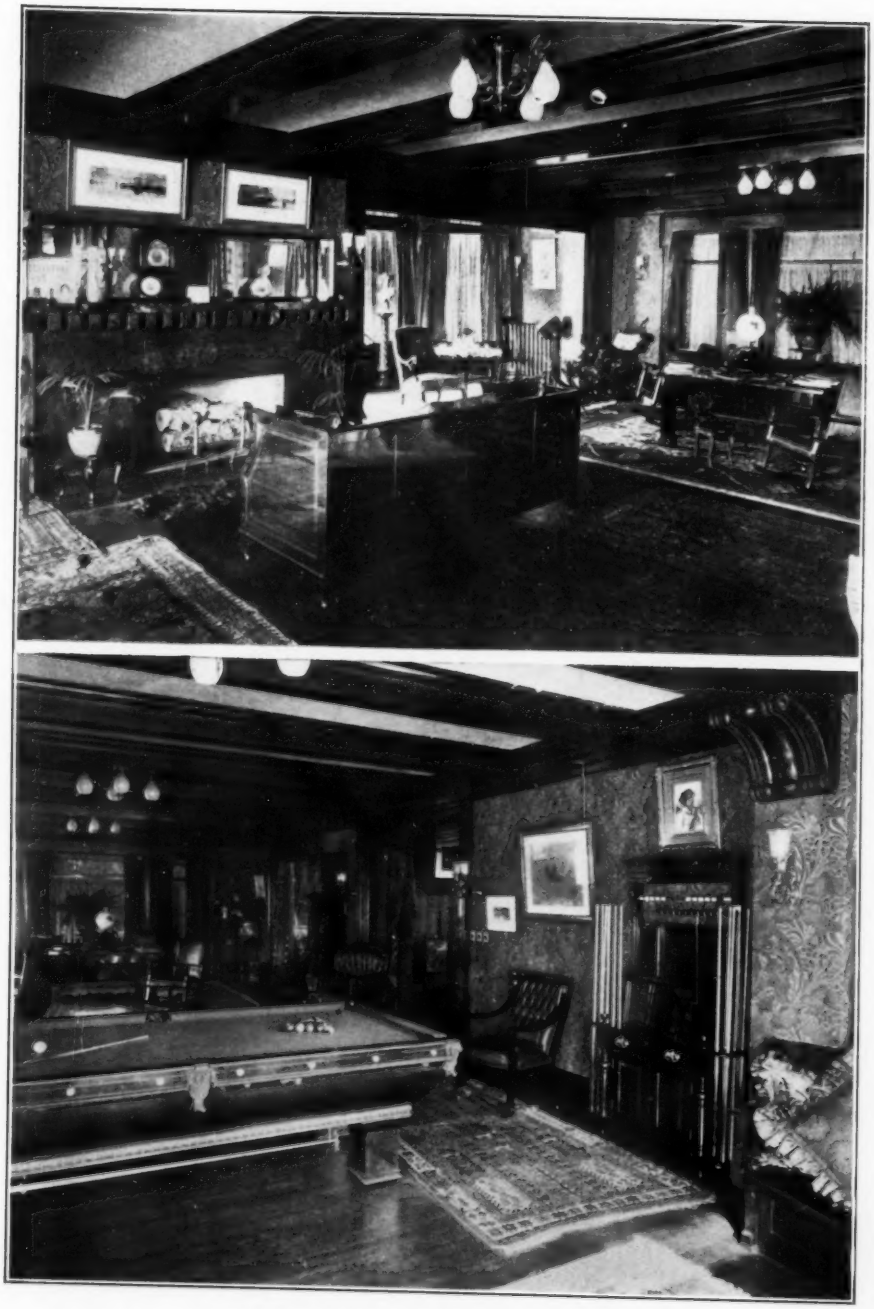
CHICAGO MUNICIPAL ART LEAGUE.

The Municipal Art League of Chicago has issued its annual Year Book, in due observance of its fourth birthday. The age of four years is not great, but it is interesting as showing that the society is more than a mere "flash in the pan," and yet that it is young for one so vigorous. The report of the treasurer shows receipts for the year of $2,249, and a balance in the treasury better than has been reported at the end of any preceding fiscal year. In the annual exhibition of Municipal Art, conducted by the League, nearly fifty local societies cooperated. It is interesting, in looking over the year's record, to note that through the representations of the League the city council ordered all unlawful signs removed from

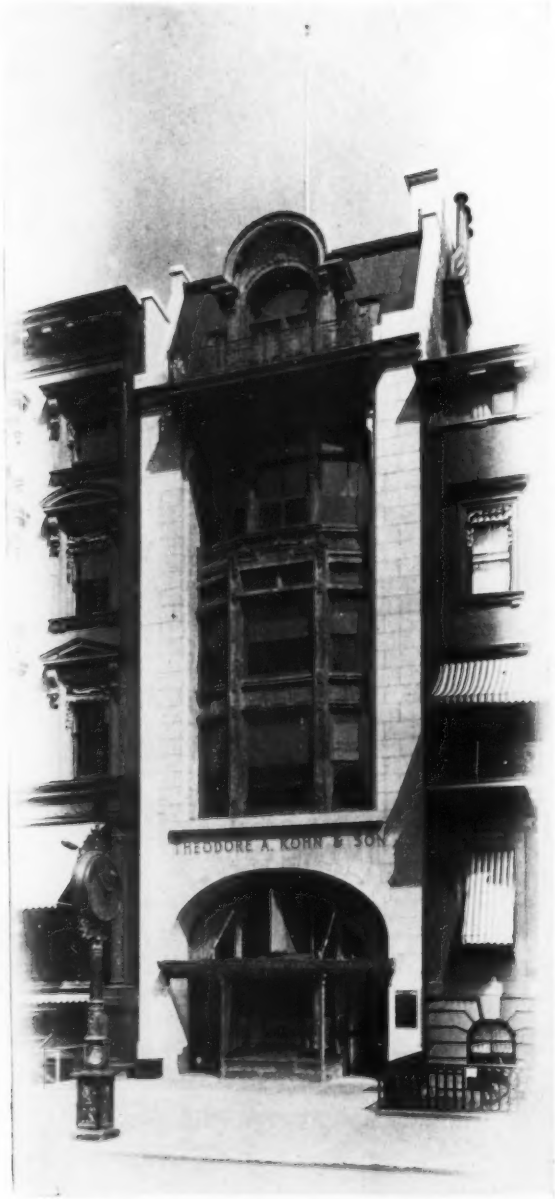
the stations of the elevated railroads, and refused them a franchise for the display of billboards; that the South Side Elevated Railroad Company consulted the League as to the color to be used in repainting its structure, and adopted the color recommended, and that definite steps were taken to secure the city's recognition of civic art in the new charter. It has been proposed that the League secure funds this year to employ a committee of experts to make plans for the comprehensive improvement of the city. The report says in this connection: "The park boards are now acting independently. Sites for future public buildings are being discussed without any consideration of their relation one to another, or the convenience of the whole people. River improvement is in charge of the Drainage Commission, only so far as the necessities for drainage are concerned. The city has legal relations with the general government, so far as navigation and commerce are concerned, which are never settled. The railroads have practical possession of one-fourth of the city, and the whole intra-mural (sic) traction problem is still in the air. The opening and widening of streets are projected only for the personal interests of individuals." This is a fairly accurate report of conditions in most cities, and makes a strong plea for the adoption of a comprehensive plan to work toward.

A BILLIARD TABLE IN A LIVING ROOM.

Interior decorators are sometimes confronted by queer problems. In a very attractive house, built recently in a western town, the man of the family had but one request to make—his living room must also be the billiard room. He did not wish to "go under the roof or down in the cellar to enjoy a game of pool." It seemed to him a small thing to insist upon. The room was designed by his architect to accommodate the table, the dimensions were 32 × 40. One end was filled by a great circular bay window. Architecturally the room was admirable. The woman whose part it was to live up to this design in the decoration and furnishings, found this very excellence most alarming. Always in thinking of the room she was faced by the billiard table—by a mass of solid, vivid, uncompromising green. How to tone it, how to treat the walls and windows, how to subdue it? Futile searches for wall paper and fabric in neutral tones which would be harmonious, took her daily into the shops with her square of green billiard cloth. With complete discouragement came the inspiration to feature the table—to make its strength the motif of the room. The woodwork was beautiful mahogany—more brown than red—and the paper she decided upon an English one in two tones of pumpkin yellow. The windows were hung with creamy net and straight over draperies of yellow velvet, from which the strong color of the walls was eliminated, but which was perfectly harmonious. Heavy pieces of mahogany furniture were chosen, and the wide Davenport lounge upholstered in green velour, which was but a shade less vivid than the billiard cloth. Great ferns and palms placed on low, black teak wood stands, reproduced the green in various portions of the room. The mantel was of green and black marble, and above its length a long, low mirror reflected the vista of the hall; in front of it was stretched a fine black bear skin. In consequence of these arrangements it is hard to realize in looking upon it that it is the outcome of a dilemma, and not a carefully planned handling of masses of difficult color. M. G.



Los Angeles, Cal. A BILLIARD AND LIVING-ROOM.



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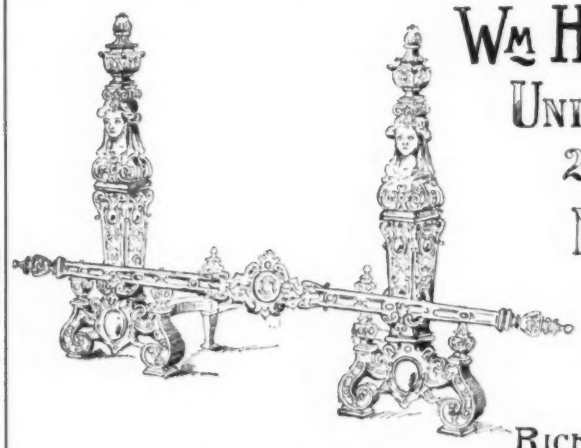

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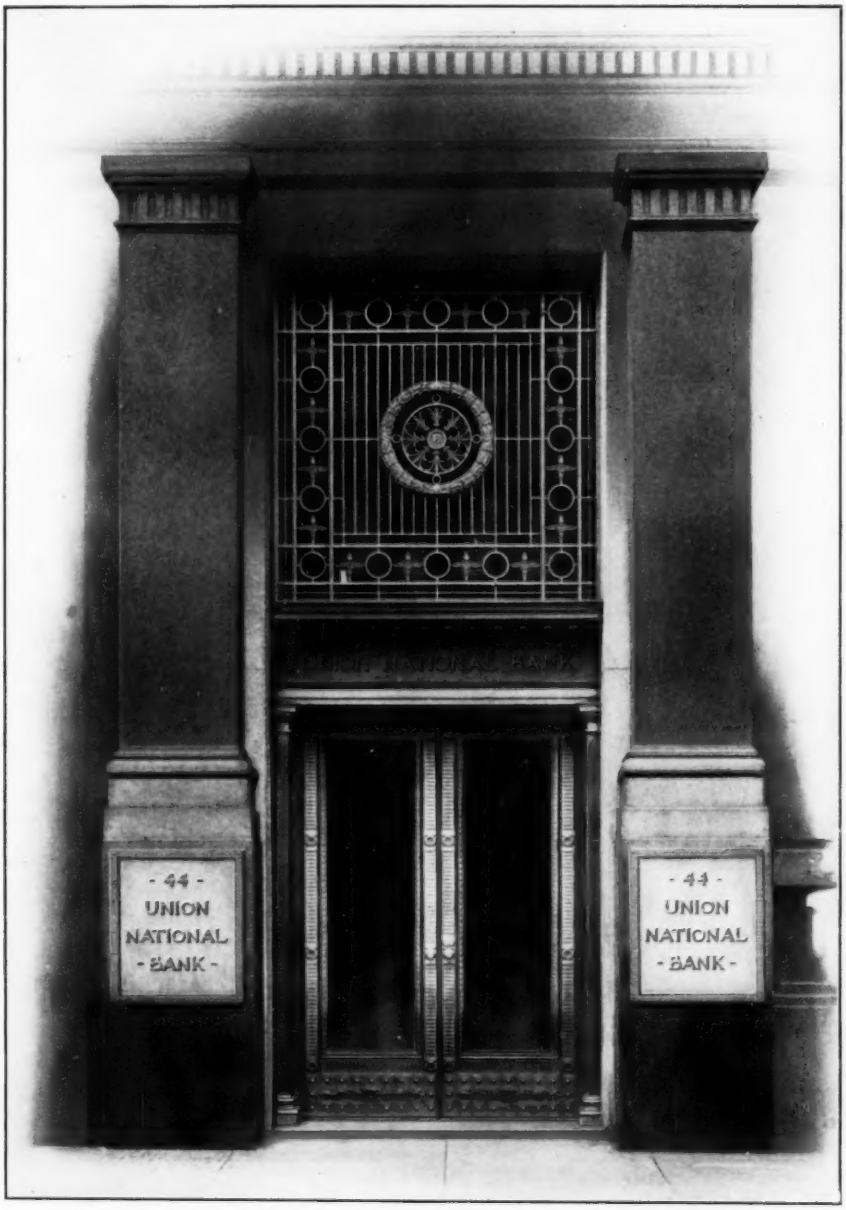

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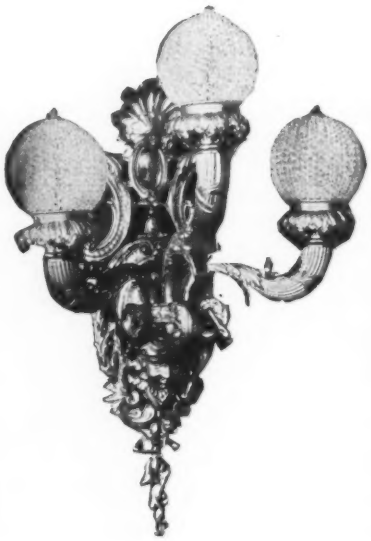

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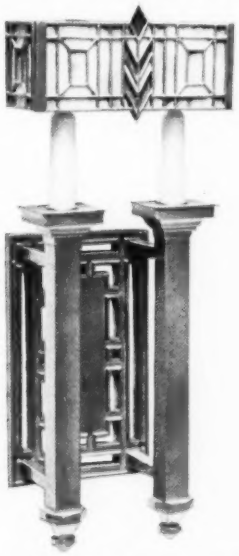

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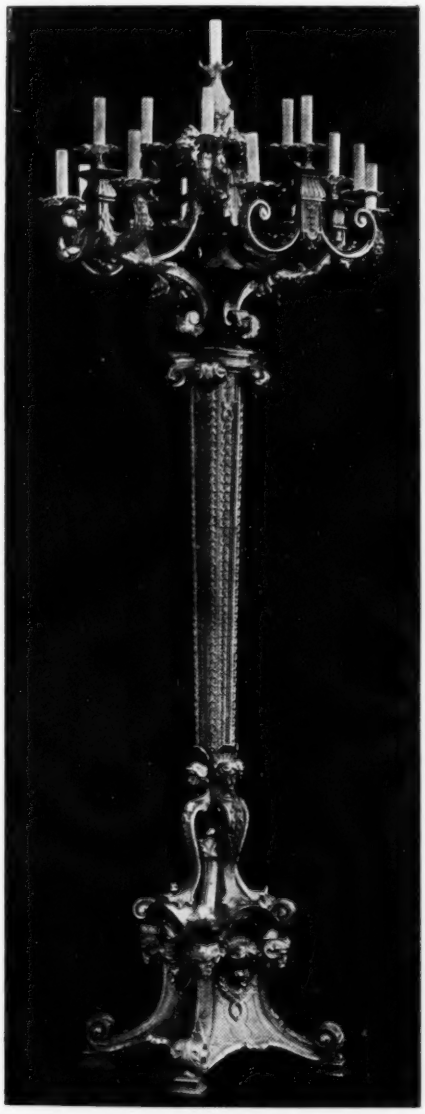

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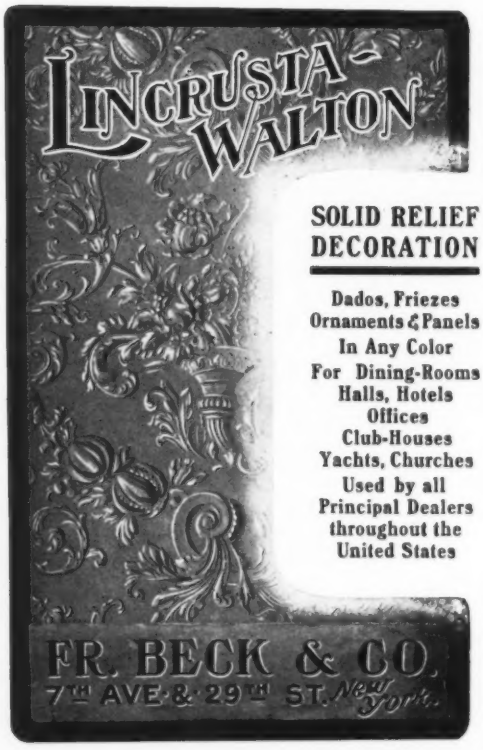

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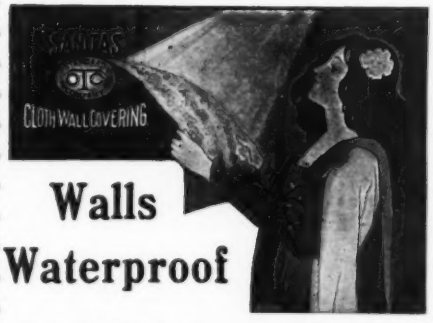

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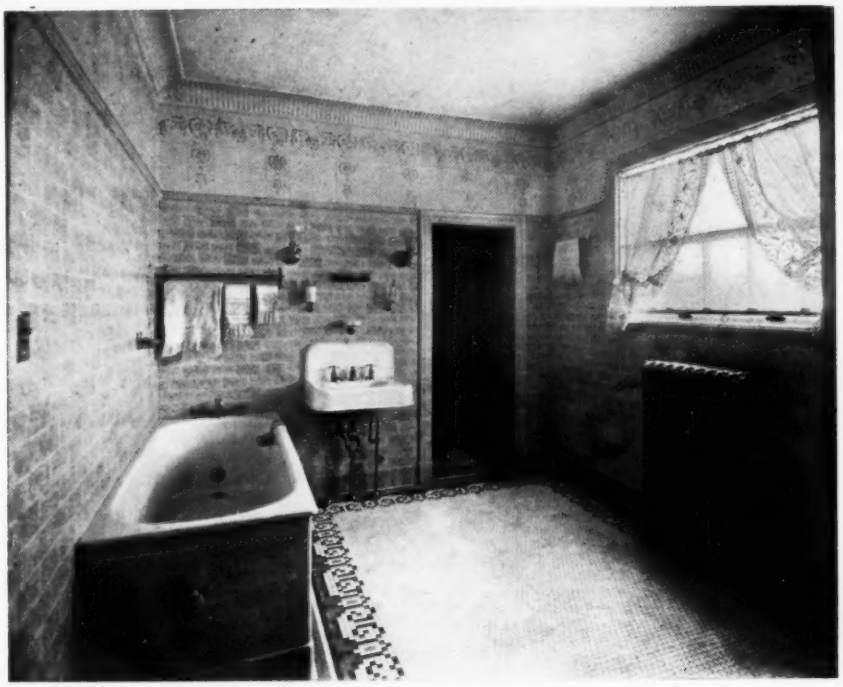

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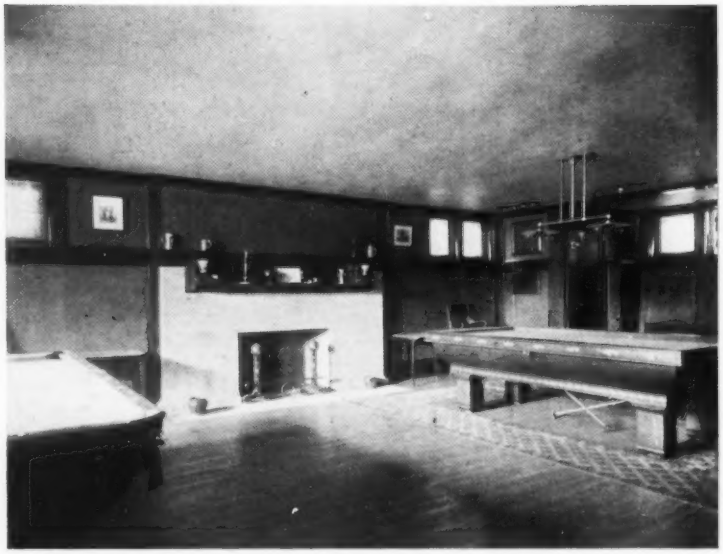

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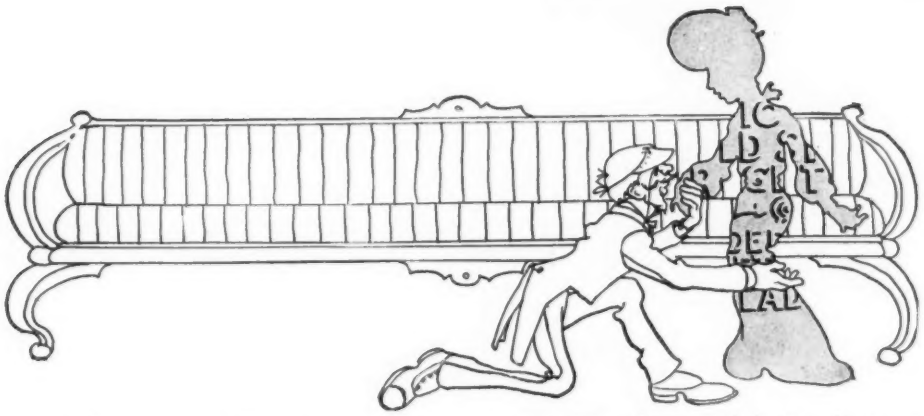

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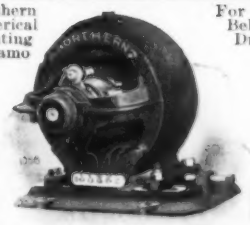

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Wood-Mosaic Flooring Co., Rochester, N. Y.

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Kelsey Heating Co., Syracuse, N. Y.; N. Y. office, 156 5th Ave.
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Warren, Webster & Co., Camden, N. J.

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Bureau Bros., 21st St. and Allegheny Ave., Phila., Pa.
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C. Colnik Mfg. Co., Milwaukee, Wis.
General Fireproofing Co., Youngstown, O.
Hecla Iron Works, N. 11th and Berry Sts., Brooklyn, N. Y.
Willy H. Lau, 12 Adams St., Pullman Bldg., Chicago, Ill.
Massachusetts Monumental Co., 150 Nassau St., N. Y. C.
Richey, Browne & Donald, Flushing and Metropolitan Aves., Maspeth, Borough of Queens, N. Y. C.
Schubert Iron Works, 1237 DeKalb Ave., Brooklyn, N. Y.
Standard Co., W. 15th and Laflin Sts., Chicago.
W. S. Tyler Co., Cleveland, O.; N. Y. Office, 11 Broadway.
U. S. Foundry and Sales Co., So. Norwalk, Conn
Jno. Williams, 556 W. 27th St., N. Y. C.
R. Williamson & Co., Chicago.
Winslow Bros. Co., Chicago; N. Y. Office, 160 5th Ave.

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Northern Electrical Mfg. Co., Madison, Wis.
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Alfred Boote Co., 124-126 W. 33d St., N. Y. C.
Edwin A. Jackson & Bro., 50 Beekman St., N. Y. C.
W. H. Jackson Co., 29 E. 17th St., N. Y. C.; Foundry and Shops, 229-239 W. 28th St.

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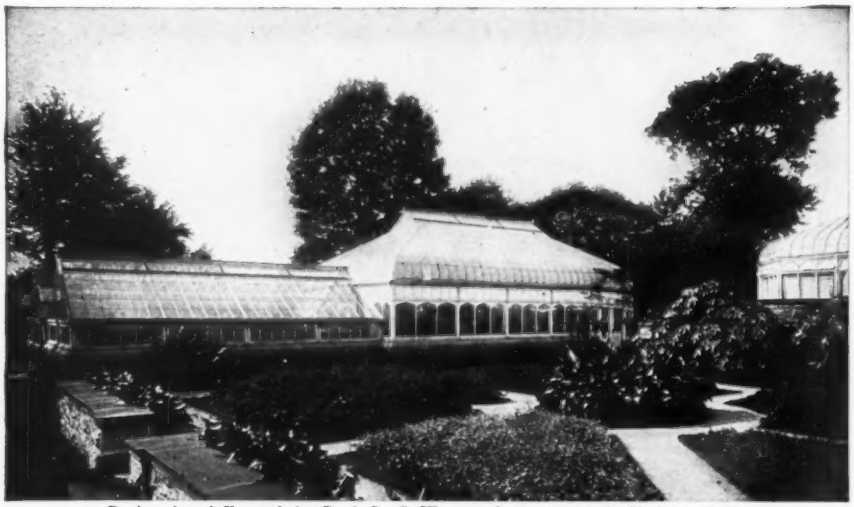
C. Colnik Mfg. Co., Milwaukee, Wis.
Cooper-Wigand-Cooke Co., 152-154 W. 34th St., N. Y. C.
Schubert Iron Works, 1237 DeKalb Ave., Brooklyn, N. Y.



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Brand	Fineness		Ultimate Tensile Strength in Pounds per Square Inch.										
			Neat						1 to 3 Standard Quartz Sand				
	No. 100	No. 200	1 Day	7 Days	28 Days	2 Mos.	3 Mos.	4 Mos.	7 Days	28 Days	2 Mos.	3 Mos.	4 Mos.
Alpha	90.8	74.6	337	857	929	775	805	....	236	306	285	320	....
Atlas	92.2	77.8	408	650	689	705	675	763	186	265	358	351	398
Dragon	92.4	75.2	388	589	725	768	....	....	203	335	350	....	....
*Giant	91.6	76.6	313	666	739	710	683	716	233	317	358	356	391
Krause	91.4	73.1	405	767	781	590	610	720	216	275	225	290	207
*Lehigh	90.6	75.3	310	688	783	793	837	826	204	313	370	372	373
NORTHAMPTON	**92.8**	**75.5**	**375**	**669**	**807**	**751**	**790**	**795**	**235**	**352**	**371**	**390**	**396**
Phoenix	96.8	80.8	316	622	751	621	....	....	275	433	413	....	....
*Saylor's	93.1	76.1	222	632	731	729	628	550	204	289	283	337	331
*Star	90.8	73.3	446	745	744	734	676	85	210	289	310	300	298
Vulcanite	90.5	75.1	311	778	764	637	602	820	264	327	325	318	378
*Whitehall	89.	70.5	444	660	731	748	712	753	201	304	343	348	353

*Average of accepted Cement.

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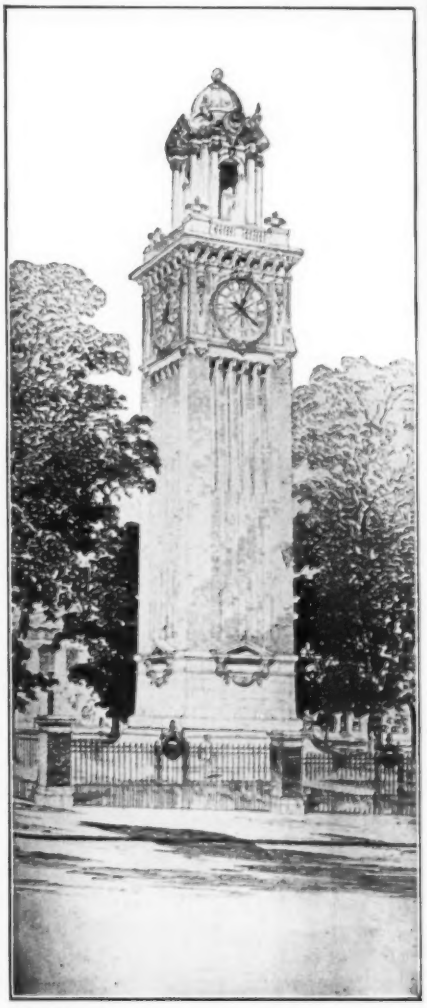

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The Conditions

The plans must contain the best possible model of a kitchen cabinet, embodying the full working surface of a kitchen table and utilizing the space above and below the table as a convenient place for the food stuffs and utensils used in every day kitchen work.

Drawings must be on the scale of three-quarters of an inch to the foot. They may be in line or in wash, in black and white or in color, according to the preference of the designers.

Each competitor must submit:

(1.) Carefully drawn floor plan showing location of doors to rear, to pantry, to dining room; placing of windows; arrangement of range, sink, ice-box, kitchen cabinet, etc. If any necessary convenience is placed outside the kitchen, its position must be indicated on the plan.

(2.) Carefully drawn elevations of four sides of kitchen.

(3.) Carefully drawn perspective and elevation of side containing the cabinet. The shape and proportions of the cabinet should accord with the kitchen scheme. All necessary sections should be indicated.

(4.) A clear description of the kitchen and cabinet not exceeding seven hundred words.

All drawings are to become the property of the donors of the prizes. Transportation charges must be prepaid on all designs.

The competition will remain open until August 1, 1905.

Remember

In the model kitchen the useful should not exclude the agreeable. Ventilation must be borne in mind; the building in of the range; the placing of windows both for light and for decorative effect; the treatment of woodwork; the use of material for floor, walls or table tops which has some special value for cleanliness or durability. Suggestions for furniture and for color scheme are also in order.

ABOVE ALL, there should be borne in mind, the possibility of IMPROVEMENT IN THE KITCHEN CABINET. The ideal cabinet should present all the housewife's requirements within easy reach of her hand, and should have a full working table surface. To save space, to save steps, to save trouble is its threefold object. It should not be cramped or crowded; all its parts should work freely; its proportions and lines should be artistic.

The Judges

The following eminent gentlemen have consented to serve as Judges:

Joseph Freedlander, Architect, New York City,
Jules Guerin, Artist, New York City,
W. J. Beauley, Architect, Chicago, Ill.

The Prizes

$1000 for the Best Design.

$500 for the Second Best Design. $300 for the Third Best Design.

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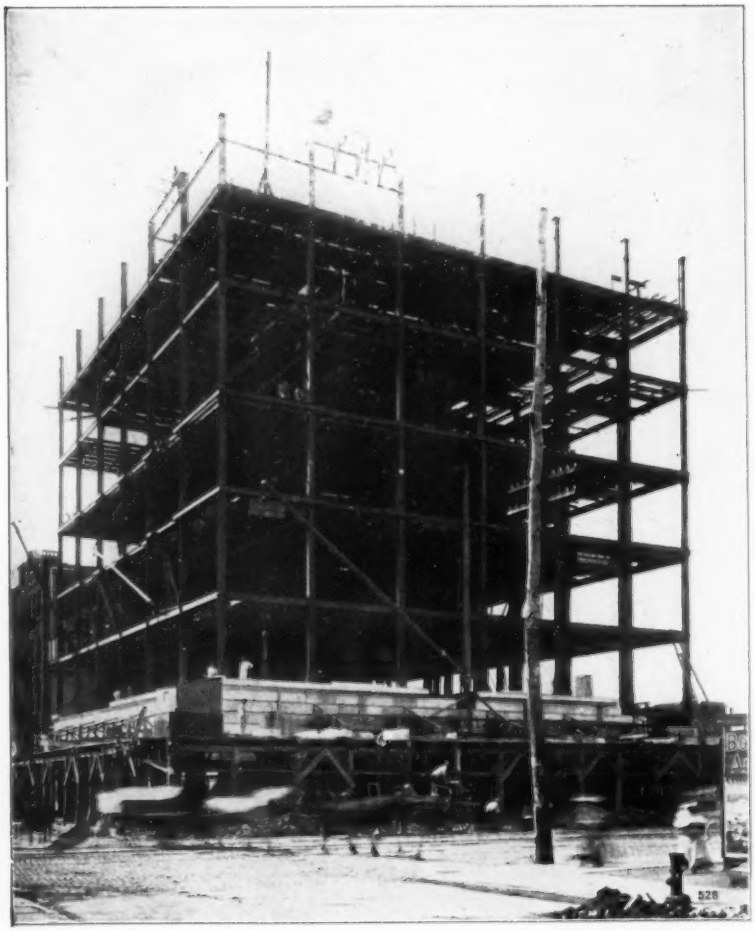

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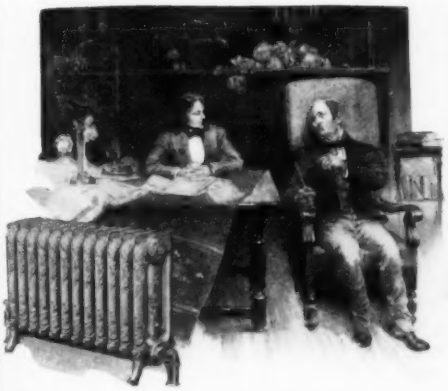

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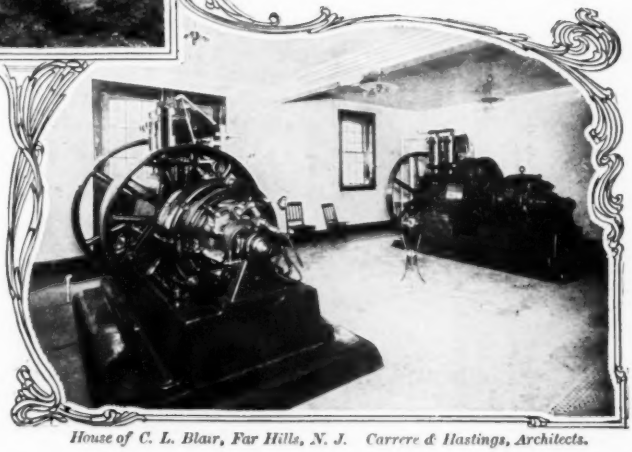

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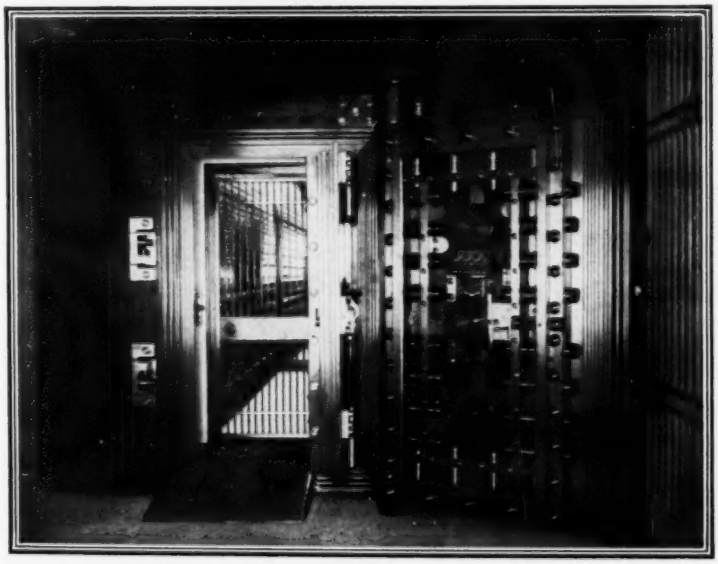

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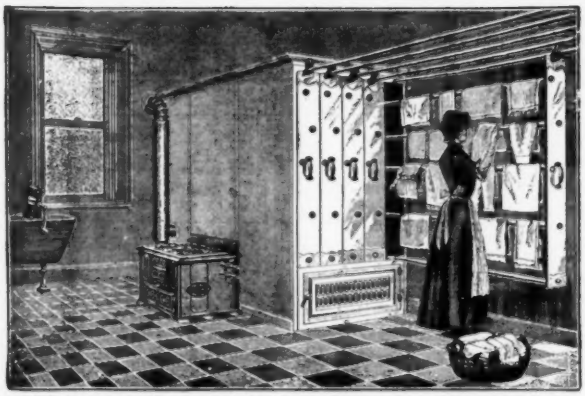

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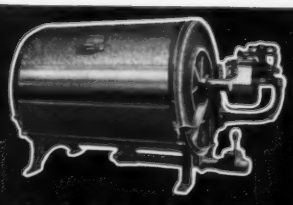

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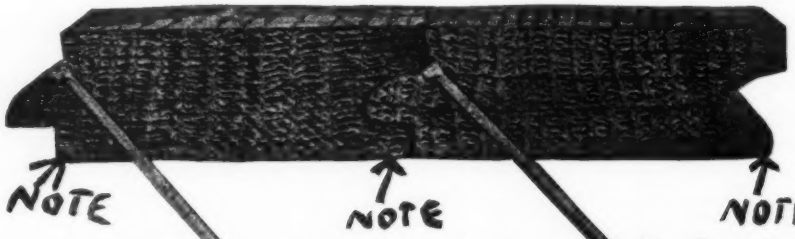

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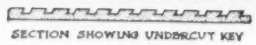

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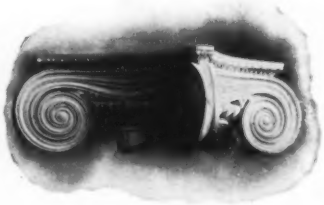

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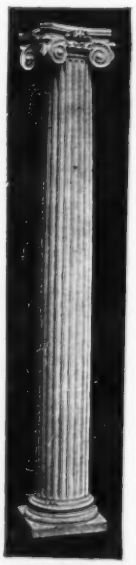

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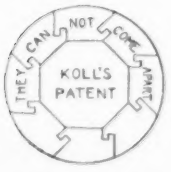

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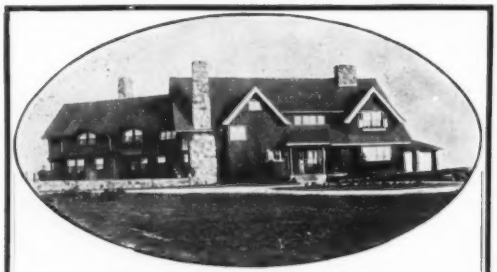

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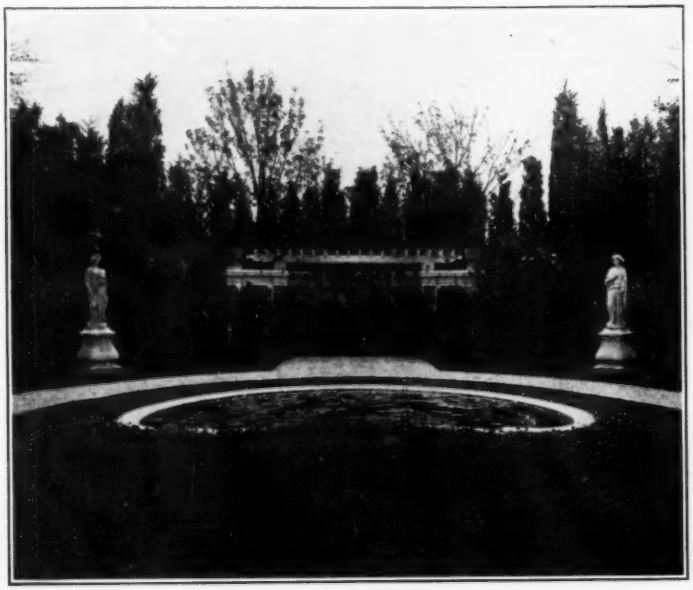

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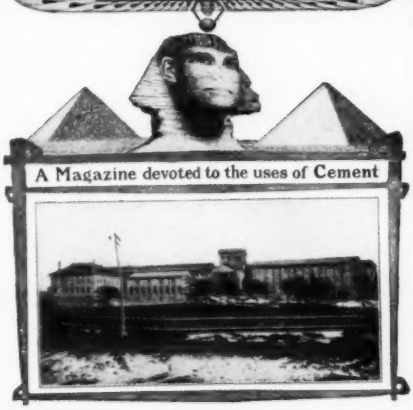

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The Editor will not leave you on the outer doorstep, however, but will take you within, where you may see how the house is furnished and decorated and how the owners live. Then you may have a walk through the garden, and then to the summer house, where, perhaps, the plan of the formal garden culminates.

There will be published articles on room decoration and furnishing, showing how the furniture may be arranged to produce the best effects, what pictures may be hung, and what bric-a-brac, inherited from some former mansion, may with advantage be discarded. In short, the new publication is intended to be

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To the one who has a Home.

To the one who has not a Home, but intends to have one.

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To the one who appreciates that the Garden and the House should form part of an harmonious scheme

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The new publication will be issued monthly, and will be somewhat smaller in page size than the "Building Monthly," viz.: 10½ x 14. It will have a handsome colored cover. It will have about 50 pages each issue. Price, 25 cents each issue; $3 a year.

SPECIAL OFFER

To any one subscribing before June 30, 1905, the subscription price will be $2.50 for "American Homes and Gardens" for one year from July 1, 1905, to July 1, 1906, and the subscriber will receive free of charge the "Scientific American Building Monthly" for June.

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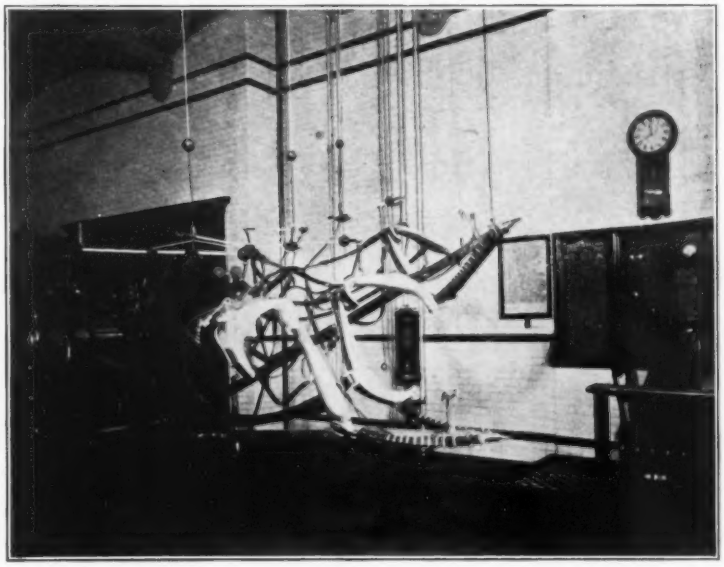

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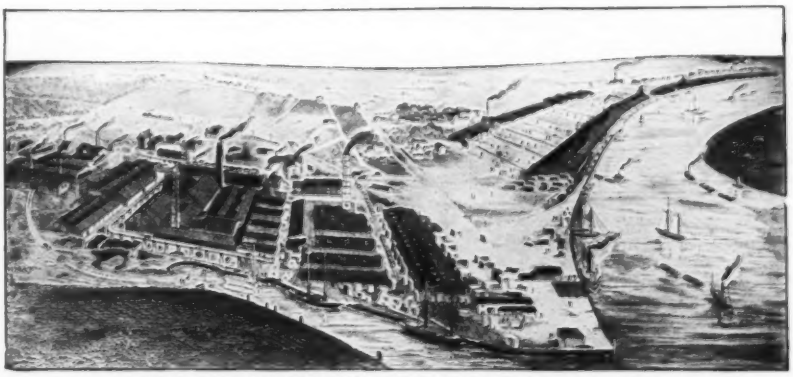

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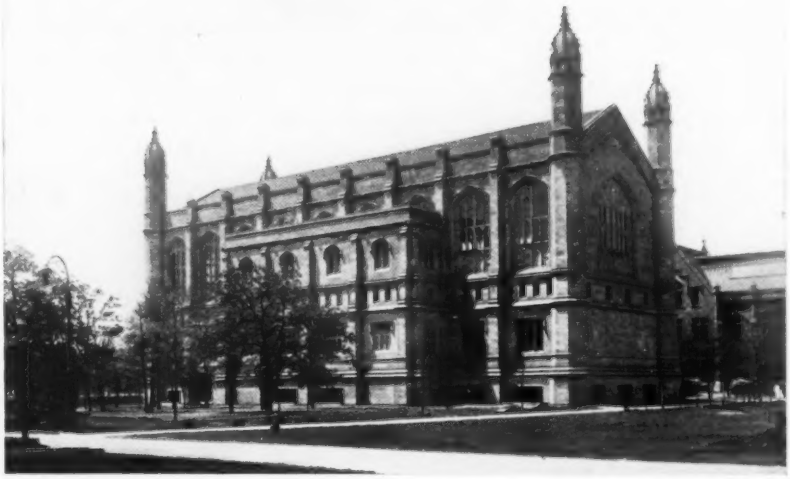

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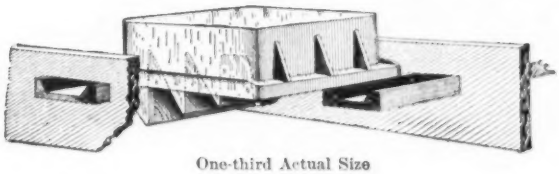

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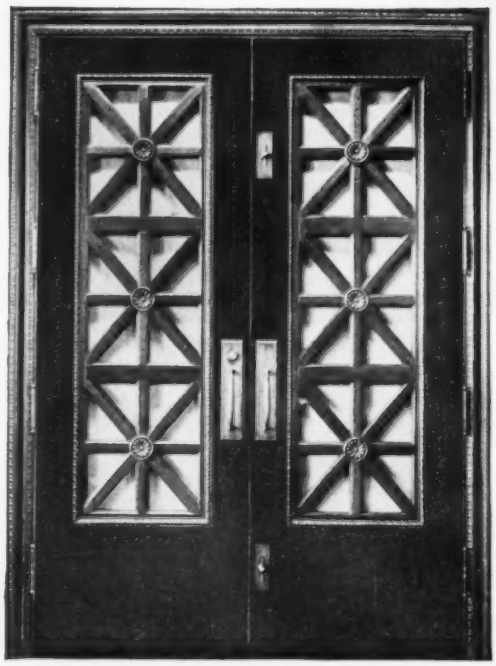

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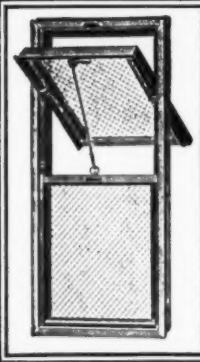

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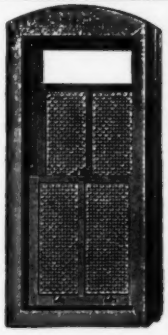

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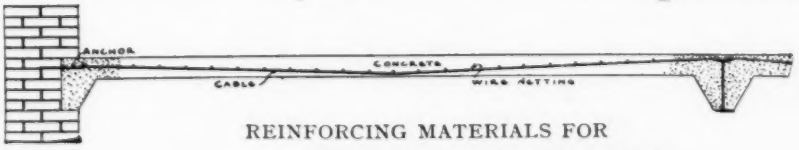

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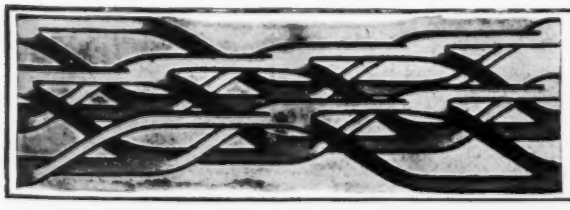

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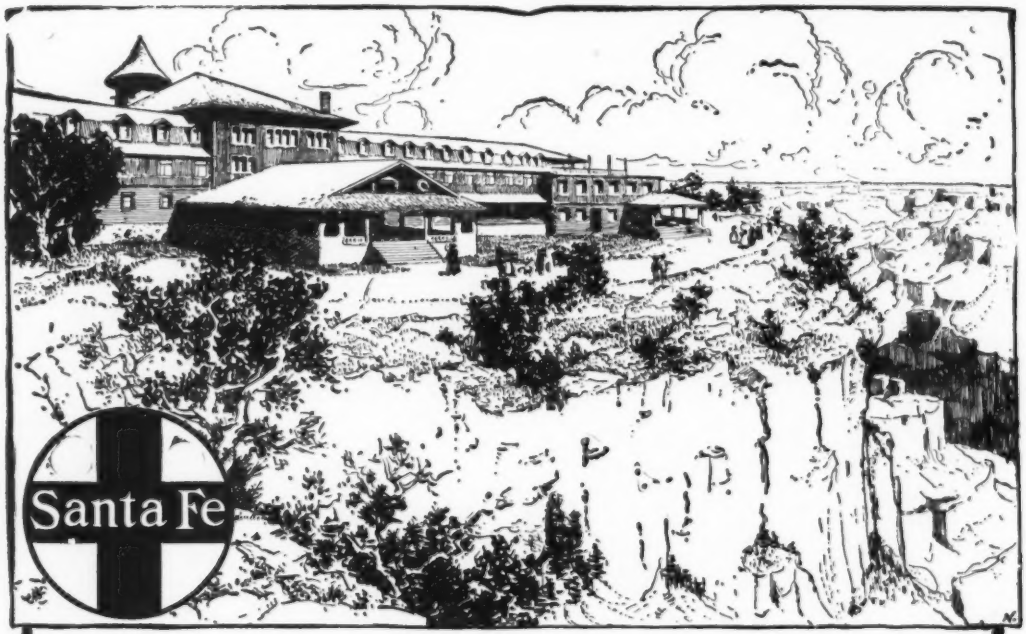

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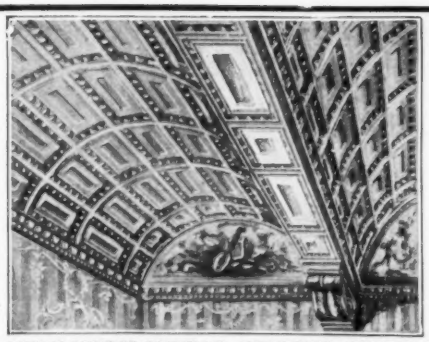

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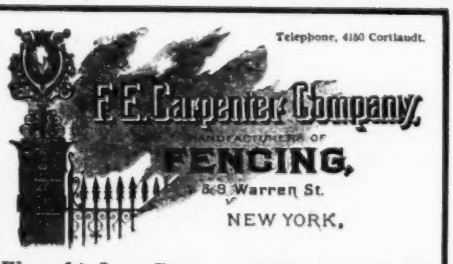

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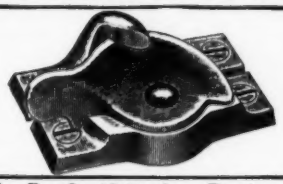

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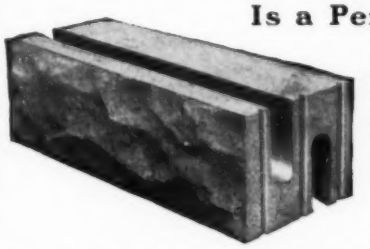

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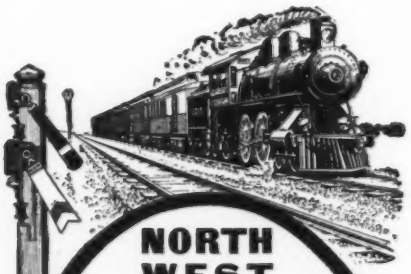

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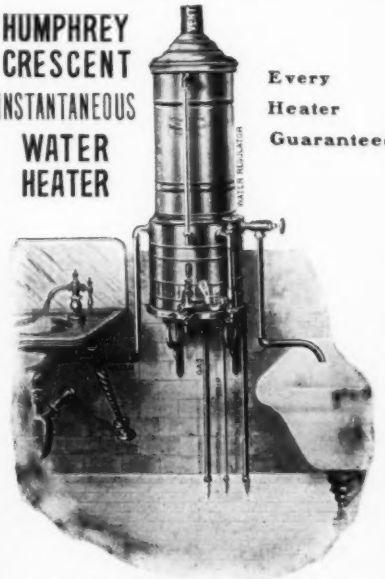

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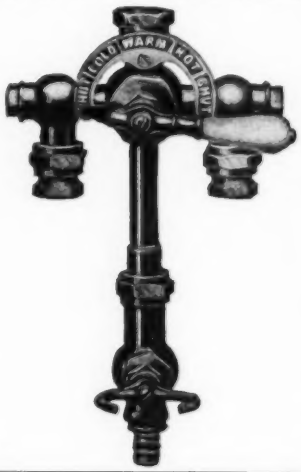

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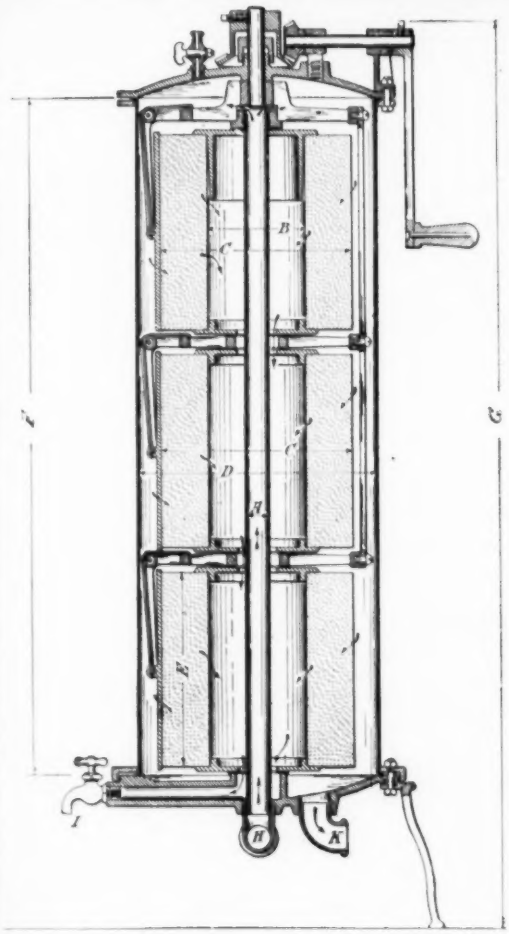

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